STATE OF LOUISIANA

DEPARTMENT OF NATURAL RESOURCES

OFFICE OF CONSERVATION

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IN RE: Sterling Sugars, Inc.

Versus

Amerada Hess Corporation

Docket No. ENV-L-2015-02

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Report of Hearing
Held At
Department of Natural Resources
617 North 3rd Street, Baton Rouge, LA 70802

November 16, 2015

VOLUME 3

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THE HEARING OFFICER: Okay. Good morning. Hess, Ms. Wheeler. You're going to call your next witness, please.

MS. WHEELER: Yes. Hess calls Dr. Glenn Millner.

WHEREUPON, GLENN MILLNER, PH.D., having been duly sworn, testified as follows:

THE HEARING OFFICER: Good morning, Dr. Millner.

THE WITNESS: Good morning.

THE HEARING OFFICER: Okay. Ms. Wheeler.

DIRECT EXAMINATION

BY MS. WHEELER:

Q. All right. Can you please state your name and address for the record.

A. My name is Glenn Millner. I live in Little Rock, Arkansas.

Q. And who do you work for, Mr. Millner?

A. I work for a company called the Center for Toxicology and Environmental Health, CTEH. It's a consulting firm in Little Rock.

Q. And what's your position with them?

A. I'm the principal toxicologist and one of the founders of the company.

Q. And you also do some consulting work. This

consulting work is through the University of Arkansas for Medical Sciences; is that right?

A. Correct. The company started out where faculty could have startup businesses. So I serve on the faculty in the pharmacology and toxicology department; and I also serve in the college of medicine, where I teach medical doctors, graduate students, nursing students, about the health effects of chemicals -- allow faculty to have startup businesses. We started the company on the university campus. We hatched -- we were the first in the incubator business, the first to hatch from the business. And 17, 18 years later it's a viable company with about 150 employees. And we have 14 Ph.D. toxicologists in our group.

Q. Your expertise is in the area of toxicology and risk assessment; is that correct?

A. It is.

Q. Can you explain just briefly what it is that you do as a toxicologist in risk assessment?

A. Well, it's -- really what we're interested in is what chemicals are present, the nature of the chemicals, the concentration, and the ways people could be exposed to the chemicals.

So in any risk assessment, what you're trying to do is characterize what chemical constituents are

present, what environmental media, and then how could people possibly be exposed to that chemical.

And there's lots of different methodologies out there: EPA has some; Louisiana has some; other states have some.

Q. Tell the Panel about your educational background.

A. So I have a bachelor's degree in biology and chemistry. But, really, I went to college to play hockey, college hockey.

Then I have a master's degree in limnology, and then I have a PhD in interdisciplinary toxicology from the University of Arkansas for Medical Sciences that's located in Little Rock.

That other school to the north that was here Saturday, we have nothing to do with that school.

Q. So you've been working in this field of toxicology for about 30 years, almost 30 years. Can you tell the Panel a little bit about what you do?

A. Really, most of the work I do is in the, kind of developing a niche practice in emergency response, where there's a need to have a toxicologist on the ground in a chemical spill, chemical disaster, such that we can understand the hazards of the chemical: What are the combustion byproducts? What are the

chemicals at issue? We actually test the air and we advise people about the health-protective distances you would need for the community or workers in any type of setting.

And I routinely work here in Louisiana with the Louisiana State Police. I spend probably more time in Louisiana than any state. So any time there's a hazmat incident involving a chemical release from a railroad, pipeline, ship, we've been there: Testing the air, working with the LDEQ folks, their hazmat folks, sharing our data; and, you know, working with Louisiana State Police because they're in charge, and on site control; and then determining what evacuations distances are necessary and then when you can lift the evacuation.

So I mainly spend my time doing that type of thing. But in the past, I started out more in the risk-assessment field. And back when they had -- you can age yourself by if you know the answer to this question, which is: Way back when all states had a TPH value by Method 418.1. And the standard by states was 50 ppm TPH or 100 ppm TPH, if you remember that. So we started looking into the scientific basis for that and determined that there really wasn't any.

So I published a series of papers, "The

Health Effects of Metal Distillates," and wrote several book chapters with Dr. Nye and came up with a procedure to evaluate the health risk of petroleum hydrocarbons in soil and groundwater.

And then fast-forward that, after that first series of publications came out, was accepted and used by California, the state of Arizona; and then Massachusetts starting developing their own method, which was a fractionation method. And at the same time there was this group called the TPH Criteria Working Group, and we wrote a five-series volume about fractionation approaches for petroleum hydrocarbon mixtures, and that's been adopted by DEQ.

So the TPH Criteria Working Group, which I served on, forms the basis for the fractionation methods used by -- you know, under RECAP.

So I've been involved in the early stages of petroleum and all through today, where you really look at the health risk of petroleum hydrocarbons in various media.

So maybe it's a long-winded answer to your question; but, you know, I've taught regulators on the West Coast and East Coast at several conferences on how to use those risk-assessment methods. I don't think they need my help now that they know. But back then,

it was, you know, in its infancy, and it's grown significantly since them.

Q. And you have conducted multiple risk assessments on oil and gas remedial sites in Louisiana; correct?

A. I have. I've worked on many sites, legacy sites; and I've also worked on some of the most -- biggest crude oil issues in Louisiana, like the Murphy Oil spill that contaminated 6500 homes. I was responsible for the overall project, tested 6500 homes for different fractions, different hydrocarbons, and came up with cleanup criteria and remediation goals for that Murphy Oil.

We were very proud to work with the DEQ folks, Tom Harris and others, on coming up with a methodology to -- because that was the first time in history crude oil got into somebody's house from a tank.

And then, since then, you know, I've done literally hundreds of risk assessments. And then the next major one was we wrote the beach cleanup risk assessment for Deepwater Horizon.

And as you can imagine, that had to get a lot of state involvement. So it was accepted by Texas, TCEQ, the DEQ folks, and also went through Health &

Hospitals, Louisiana Health & Hospitals; accepted by the state of Mississippi, ADEM Alabama, and then Florida, and then EPA Region 4, Region 6, CDC. As you can imagine, that document became the basis for the beach closure for all the Gulf States during the Deepwater Horizon spill.

Q. You've been accepted in a number of Louisiana state and federal courts as an expert in toxicology and risk assessment; is that correct?

A. Yes, I have.

Q. Okay. You've also testified at one of the first LDNR hearings under Act 3 -- the Klein Act 312 in the Tensas Poppadoc case; is that right?

A. I did. I was at the first Act 312 hearing. I think we were in a bigger room than this.

MS. WHEELER: I would like to offer and introduce an updated version of Dr. Millner's CV. It's been distributed in the binders. It's also included with the plan at Tab 26.

And at this time I would like to offer Dr. Millner as an expert in toxicology and risk assessment.

THE HEARING OFFICER: Toxicology and risk assessment?

MS. WHEELER: Yes.

MR. JONES: No objection.
THE HEARING OFFICER: So he's accepted as an expert in toxicology and risk assessment.
BY MS. WHEELER:
Q. All right. Dr. Millner, to kind of set the stage for your opinions that you'll give before this Panel, you're aware that Frank Edwards, Hess' remediation expert, presented a plan last week with testimony to the Panel that calls for remediation of the soil at the site at issue in this case; and two of the AOIs that are at issue call for a passive closure. Are you aware of that?
A. Yeah. Yes, I am.
Q. Okay. And basically Mr. Edwards is recommending passive closure of these sites because of their sensitive nature, and that coming in and digging up the constituents and removing them would pose more harm to the vibrant marsh setting in which they currently exist without a benefit.
Are you aware of that?
A. Yes. That's not an uncommon thing to look at.
Q. All right. And in addition to Mr. Frank Edwards' testimony before the Panel last week, we heard from Hess' expert ecotoxicologist, Dr. John Rodgers;

and he explained to the Panel that the risks to ecological receptors leaving these two AOIs in a passive closure was justified because you wouldn't want to destroy a vibrant marsh setting without justification.

Are you aware of that?

A. Yes, I'm aware of that.

Q. All right. Now, to close the loop, you are here to testify that there is no potential risk to human health caused by the passive closures of AOI 1 and 2; is that right?

A. Yes, ma'am.

Q. Okay. Can you explain to the Panel how you evaluated the risk at AOI 1 and 2?

A. Sure. It's really pretty simple and straightforward.

So the two chemicals at issue under 29-B that we're discussing is an exceedance of oil and grease and true total barium. So I looked at the toxicity of both of those, the barium and the elevated DRO at AOI 2. And what I did is I took the available data and I compared it, you know, under RECAP, their health screening criteria, went from a screening standard to an MO-1 --

THE WITNESS: I don't know if that's me or

whoever's the --
THE HEARING OFFICER: That's me.
THE WITNESS: Is it yours?
THE HEARING OFFICER: I've got hearing aids, so I'm going to try to turn them down.
THE WITNESS: That's okay. I thought it was me.
So I looked at it both under an industrial, a residential, and a recreational scenario, and I determined that there's no health risk from barium or TPH-DRO at both of those locations, and simply it's really not an issue.

BY MS. WHEELER:

Q. And that's based upon the education, experience, and training that you just talked about, your 30 years of work in the field of toxicology as a risk assessor; is that right?

A. Yes. And then applying the elements in RECAP that I would have to rely on to form my opinion, yes.

Q. So what I want to do for the Panel now is kind of walk through the two constituents that you analyzed in doing the risk assessments.

Let's start with true total barium which was found, I understand, at both AOIs 1 and 2.

Why is true total barium not a problem for passive closure at these two AOIs?

A. Well, you know, barium -- essentially what I did is I looked at the two highest areas of true total barium and I could not personally get to the AOI 1 because it was pretty much under water, so I went to the second highest level. I took a soil sample and I sent it to a lab, and had x-ray diffraction of that sample; and I determined that that compound is mostly barium sulfate, or barite.

And as a toxicologist, it's well known that barium sulfate is essentially nontoxic because it's not absorbed by the body.

As an illustration of that, if you ever had an x-ray or a CT scan, you've taken some liquid. That liquid you get is barium sulfate, and you get it at a concentration of about up to 810,000 milligrams per kilogram, which is 81 percent.

So before you take your CAT scan, you're drinking an oral suspension of sodium sulfate to get the contrast in the radiograph. So, you know, we know in toxicology, it's essentially nontoxic.

And so I looked at the barium method that's required under RECAP. The true total barium method is obviously a more vigorous extraction, and so it will

always take out more barium than the method that's required under RECAP.

Q. I understand that you ran and x-rayed a fraction test to verify that the form of barium at the site is barite. Is that right?

A. Correct.

Q. Can you explain to the Panel where that test was and what it is and why it supports your conclusion that true total barium is not an issue here?

A. Well, yeah. I mean, because, like I just said, as a toxicologist, the form of barium is very important, whether it's a soluble species or an insoluble. And in this case I determined it was an insoluble species; so essentially it can't be absorbed by the body, so it really can't exert any kind of toxicological effect.

I also even looked at it assuming it was; and also determined that, even if it was, it's going to also screen out under RECAP's MO-1. Industrial and residential, they both screen out.

Q. So, as I understand it, in addition to analyzing it as barite, you also looked for completeness at the form as true barium and you found that it posed no risk in that form to human health; is that correct, at the site?

A. No. I -- a little switch in the way you asked the question.

I didn't assume it was true total barium. That's not the method that RECAP, as a risk assessor in toxicology. You look at the method that is required under RECAP and I used those values, not the true total barium value.

Q. Total barium, not true total barium.

A. Correct.

Q. I apologize.

And you analyzed this under an industrial and a nonindustrial standard, and it met both of the criteria; correct?

A. Correct.

Q. Okay. So based upon your analysis from a toxicological standpoint, leaving the barite at AOIs 1 and 2 will not pose a human health risk, and there's no justification for digging up that site, is that correct, to remove that barite?

A. Correct, there's really no health reason to remove it.

Q. All right. So let's next turn to the oil and grease that was found at, I believe, AOI 1.

How did you analyze oil and grease from a risk perspective to determine that that constituent at

AOI 1 poses no risk to human health if left there and not removed?

A. Well, I'm sure as the panel's aware, oil and grease is a generic method for hydrocarbons.

So I looked at the available fractionation data and TPH-DRO data for AOI 1 and AOI 2, and we only had one hit of -- we only had a hit of TPH-DRO at AOI 2 that would be above any type of screening standard.

So I looked at the fractionation data for those samples and determined that the fractionation data, which is the preferred method to look at health risks -- because the generic method, the TPH-DRO, doesn't tell you anything about risk because you have no idea what the constituents are. So that's why you look at the fractionation approach.

And when I did, the fractionation approach is below either a RECAP MO-1, industrial or residential.

Q. Okay. Now, you mentioned -- and the panel's heard a lot about fractionation for TPH. This is a universally accepted methodology; is that correct, and is preferred by RECAP?

A. Yeah. In fact, the new draft guidance that Louisiana RECAP is putting out, they are getting away -- totally eliminating the DRO, ORO, GRO fractions and going straight to fractionation methods. It's not

been finalized and -- but that's where it seems to appear that the agency is going.

But irregardless of that, as a toxicologist/risk assessor, it's clear you need to have the fractionation data to render an opinion whether or not it could pose a human health risk. Without that, you have no way of knowing what it -- what it's made up of.

Q. All right. So based upon your analysis from a toxicological standpoint and your experience in toxicological risk assessments, leaving the oil and grease at AOI 1 will not pose a risk to human health, and there's no justification for digging up that area; is that right?

A. That's correct.

Q. So, to kind of sum up: Based upon your knowledge, education, and training for 30 or so years and your background in toxicology, it's your analysis that none of the constituents at either AOI 1 pose a risk to human health and, therefore, passive closure is warranted from a human health perspective?

A. That's correct. Passive closure won't -- by leaving the constituents in place, won't pose a health risk.

MS. WHEELER: I tender the witness.

CROSS EXAMINATION

BY MR. JONES:

Q. Dr. Millner, Glad Jones. Nice to see you this morning. I've got just a few minutes of questions for you.

I want to be perfectly clear with our Panel that, in connection with your expert opinions in this case, you are using RECAP to justify violations of regulations of 29-B. Correct?

A. No. What I was asked to do here is determine whether the constituents present in AOI 1 or AOI 2 pose a health risk to humans.

Q. Yeah. Are you using RECAP in that exercise?

A. Yeah. I'm using the elements of RECAP that are necessary to arrive at that opinion.

Q. Okay. That's what I wanted to be clear. You're using RECAP to arrive at your opinions in your case, in part?

A. Well, RECAP and my expertise in toxicology: Understanding the health effects of petroleum hydrocarbons, understanding the basis for the various standards, the fractionation standards such as -- you know, I'll give you an example. TPH --

Q. I don't really need an example.

A. Okay.

Q. I just -- I wanted to confirm that you were using RECAP.
A. That's one of the elements.
Q. Okay. All right.
Of course, you're welcome to do it if the Panel wants to hear it, but I just wanted to confirm you're using RECAP.
A. That's one element, correct.
Q. Okay. So as a toxicologist, one of the things is -- or two things that are really important is that you rely upon data, sampling data, sent to a qualified laboratory that's going to come back to you and you determine that data.
Is that a fair statement?
A. That's correct.
Q. You're not one of those guess guys. You get the data in and then you make certain conclusions; and you come and testify before a Panel just like this based upon data.
A. Correct.
Q. Okay. The other thing that's important is that the data be taken in the right place when you're analyzing and rendering opinion about a particular area; is that right?
A. Correct.

Q. All right. Well, let's start with location.

The fact of the matter is this barium x-ray and fraction test that you're talking about, you did not take in either AOI 1 or AOI 2. Correct?

A. Right. I told the Panel that I couldn't get to AOI 1.

Q. You said you couldn't get to AOI 1.

A. But the second highest wasn't at AOI 2; it was at an offsite location.

Q. I appreciate that. Let me just ask my question.

You did not take the x-ray and fraction test in the areas that you're suggesting do not pose any type of human risk and, therefore, should be passively closed. You went and took the fraction test somewhere way away from those two areas.

I just want to confirm that.

A. That's correct.

Q. Likewise, you submitted your report in this case -- when did you submit all of your opinions that you're giving today? Sometime in May; correct, may of 2015?

A. I'd have to look at the date, but that's approximately correct.

Q. Somewhere around May or June. I'm not trying

to hold you to the exact time.

In May or June, you have a whole lot of data from GHD, ICON, that you were relying on, just like where I started: The data that you rely upon for your opinions. Correct?

A. Correct.

Q. And it's that data that you had prior to issuing your report sometime in May or June that are allowing you to provide this opinion about what the current conditions are of the site; correct?

A. Correct.

Q. You have not provided any supplemental report since you've submitted that report in May or June. In other words, all the data that you were going to rely upon you had in your possession back in April, May, or June, leading up to your report. Correct?

A. Correct.

Q. All right. You have not since then submitted an addendum to your report; correct?

A. I have not. But the CRA/GHD folks have.

Q. Yeah, they have.

And you have not provided any additional information about any additional report after yours; correct? In May or June?

A. Are you asking me if I did one?

Q. Yeah.
A. No, I have not.
Q. You have not done an addendum?
A. Correct.
Q. Right. All this testimony that you've been giving is about what the data you had back in May or June; correct?
A. Correct.
Q. All right. You are aware that, on October 23, 2015, Mr. Edwards and GHD now, formerly CRA, submitted an addendum. Correct?
A. Yes.
Q. And you are aware that the purpose of that addendum is -- we can read it right out of his letter -- "GHD submits this addendum to provide for the collection of additional analytical data to confirm delineation of constituents."
You're aware of that?
A. I am.
Q. All right. Have you seen this letter before?
A. I have.
Q. Okay. Let's go to the -- let's go to the next slide, please.
Now, you're aware that in Louisiana, under Chapter 6 here, that "Each plan shall fully delineate

the vertical and horizontal extent of the environmental damage"? You're aware of that being a regulatory requirement; correct?

A. Yes.

Q. Okay. Let's go to the next one.

This is the risk evaluation.

Let's go two more and then we'll come back to that.

Yeah.

All right. So let's go, let's go here to AOI 1. This is one of the areas that you wanted to -- that your testimony is presents no health risks and we ought to be able to passively close this. Right?

A. That's correct.

Q. All right. Have you seen the new sampling proposed pre-excavation for AOI 1 that Mr. Edwards has proposed?

A. I didn't look at those locations. I didn't look at the locations where he's proposing to do that.

Q. Well, did you know before you came and offered this Panel some testimony this morning about what the health consequences were going to be of this particular AOI 1 site, that Mr. Edwards has proposed to do samples on constituents under 29-B that he has never done before in this case? Were you aware of that, yes

or no?

A. Aware that he's asked for constituents that he's never tested before?

Q. Correct, in AOI 1.

A. I didn't --

Q. Were you aware of that?

A. I didn't compare what -- I did not compare what he is proposing this time for what was done last time, so I haven't -- I can't really answer that question.

I'd have to go look at what they did last time versus what they did this time to be able --

Q. Well, I'm going to represent to you that each one of these samples in AOI 1, which you just told the Panel poses no human health risk whatsoever, each one of these samples -- there are six of them -- represent sampling of constituents that have never been tested for inside of AOI 1 before. Are you aware of that?

A. Well, I think you just asked -- I'm not trying to dodge your question. I haven't compared what was done first versus what was second to be able to answer that question.

Q. Did you know he was going to go out and take six more samples of constituents after --

A. I don't --

Q. Hold on.

-- after you rendered your opinions based upon the data you had back in May or June?

A. Yeah. He's going to go out there and sample before excavation -- I mean, I'm sorry, not before excavation. He's just going to go out to do some confirmatory testing to determine whether the true total barium that you have is going -- is barite or barium sulfate.

Q. Oh, no, sir. That's not what he testified --

A. Well, that's one thing he's doing.

Q. Well, it may be one thing; but that's not what he testified he's going to do.

All of these are going to be a whole suite of 29-B samples, of which have never been tested in AOI 1 before.

Are you -- do you know that?

A. I'm not -- like I said, I didn't compare the suite done the first time against the suite that he's proposing here to be able to answer you.

Q. In AOI 1 you looked at the analytical data related to barium; correct?

A. Correct.

Q. Right. You didn't look at it with regard to cadmium or oil and grease or any other parameters;

correct?

A. No. I looked at every -- I looked at all the constituents that were detected at AOI 1 and AOI 2 and ran through a screening process in my report.

Q. Well, do you know what was detected in AOI 1 in the first round?

Are you aware that the only thing he tested for was barium in this site?

A. I'd have to go back and look at my report to see what exactly was tested for at AOI 1 the first time.

Q. With regard to these six samples, you know that these samples have not been gathered, nor have there been any data back for them; correct?

A. Correct.

Q. If those samples come back and they say something -- if they have a hit or they say something different than the original samples, you would like to see that data before you offered any expert opinion in this case; right?

A. Well --

Q. Didn't you tell me it's important for you to have data with regard to your conclusions?

A. Yeah. I mean, I would -- I would look at the data and see if it changes my opinions. I mean, that

would be not uncommon.

Q. Right. And you have no idea what this data is going to show; correct?

A. Well, I'm pretty sure it's going to show the same thing, but --

Q. Well, but you told me earlier that you're not one of those guessing guys. You get data and then you make decisions; right?

A. Well --

Q. And you make conclusions --

A. Yes.

Q. -- and opinions based upon the data that comes from the sampling; right?

A. Yeah.

MR. JONES: Okay. Well, let's go -- let's go to AOI 2, the next one, Connie, please.

Q. Are you aware that Mr. Edwards is proposing to take approximately 12 to 15 additional samples for a full suite of 29-B parameters at AOI 2?

A. I knew there was -- I didn't know the number was 12, but I knew there that ...

Q. Well, are you aware that he's planning on taking over, over 10 -- well, I think he took eight before, and he's now proposing to take 12. Are you aware of that?

A. I think I tried to answer it. I was trying to tell you, I didn't know the exact number --
Q. Right.
A. -- but I knew he was taking more samples.
Q. Well, likewise, you've got -- you have no idea what this sampling result -- what the sample results here in AOI 2 are going to be that he proposed on October 23rd, 19 -- excuse me, 2015. Right?
A. Correct.
Q. All right. So you have -- you really, you really -- there will be more -- is it a correct statement to say that there will be more sampling done in this particular case that you as a toxicologist expert would like to review before you conclude, based upon the data, that there's no human health risk posed here? Correct?
A. Let me try to answer it this way.
Q. I'd like you to answer it my way first. And then if you need me to explain my question, I'll be happy to do that.
Do you understand the question?
MS. WHEELER: I'd like to object to Mr. Jones' harassing the witness. He can answer --
MR. JONES: Well, it's not harassing. I'd

like him to answer my question. That's a fundamental --

THE HEARING OFFICER: I think it's a yes or no question, and then you can explain your answer.

THE WITNESS: Could you repeat the question?

THE HEARING OFFICER: I thought it was a yes or no question. But try it again.

BY MR. JONES:

Q. So you had -- well, let's see.

You told me -- I'll do it again.

You told me when I first started asking you questions that you would do two things: One, you get data and you render opinions on that. You're not one of those guessing guys. And two, it's important that that data comes from the right geographical area so that you can apply it correctly.

A. Correct.

Q. Correct?

A. Correct.

Q. All right. We now know that they are going to take some dozen or so additional samples in the exact geographic area that you're proposing poses no human health risk. Correct?

A. Correct.

Q. You do not have that data as you're sitting here today.
A. Correct.
Q. Correct?
A. Correct.
Q. All right. Now, if you're a data-driven guy and your opinions are based upon real-time results that come back from samples that are taken, you have no idea what these are going to be.
And before you offer -- the results are going to be. And before you offer your testimony, to be consistent with being a data-driven guy, you need to know what the answers are to the -- what the results are of these samples. Yes or no?
A. Yes.
Q. And the same thing would be true with AOI Number 1; correct?
A. Correct.
Q. Yeah.
A. I mean, you can't talk about something you don't have data for.
Q. Yeah. And that same thing would be true for AOI 3, 4, 5, and 6, and 7 and 8 and 24 if we've got additional sampling proposed --
A. Correct.

Q. -- so we can end this testimony quickly, instead of me having to go through all of those?
A. Correct.
Q. All right.
A. If there's more data and I don't have the results, I can't, I can't tell you what it means.
Q. Well, so we know that there's at least 25 or 30 samples coming in, and you have no idea what that data is going to be. So how can you come in here to a Panel and say, "Here's my opinion."
You knew all these samples were going to be taken before you took that stand this morning, did you not?
A. I knew that the other samples were going to be taken. And I can testify about the existing data and what it says.
Q. But, sir, we're talking about existing data when you knew there's 30 or 40 or 50 more samples coming on this particular site. And you're a data-driven guy, that has to be taken from the geographical area, and you're still offering these opinions?
A. That's correct. And they're valid opinions.
Q. Yeah. Well, okay.
Well, they may be valid opinions based upon

the data you had at the time. But you don't know whether they're valid decisions based upon your testimony just a moment ago. You don't know whether it's valid until all these samples come back. That's what you just told me; right?

A. I can't tell -- when the data comes back from that, then I'll look at it to determine whether it affects my opinion in one way or another.

Q. Yeah. But your opinion based upon the data you had before is it's all fine. But you have idea what this is going to be. So would you like to schedule this again in January and come back and offer what your opinion is then?

A. I can.

Q. Great. All right. Maybe we'll do that.

All right. Let's go back to RECAP. Let's go back to RECAP that we skipped just a moment ago.

All right. And I think -- I don't need to spend a whole lot of time with this.

But you are aware that, under RECAP, when you start using RECAP, you cannot composite samples to find the delineation of the horizonal and vertical extent of contamination; right?

A. That's not correct.

Q. You can?

A. Yeah.
Q. You think that's a good practice?
A. That's what we did with the entire Murphy Oil spill with the --
Q. Who were you working for then?
A. Working for Murphy Oil and working with the DEQ-approved plan.
We had -- we used a composite sampling program to, to -- for properties. We absolutely do composites.
Q. All right. Okay. All right. So you think it's okay under RECAP to do composite sampling to define the horizontal and vertical extent of the contamination.
A. I think --
Q. Simple enough, if that's your position.
A. You can --
Q. You're aware there's another section in RECAP that says you're not supposed to do that; correct?
A. You can do, you can do composite, and you can do single points to delineate. You can do both.
Q. Which one do you think is more accurate about the condition of the property? As a good scientist that wants to be intellectually honest with the state agency, which one of them really tells you where the

extent of the contamination is, delineation or composite samples?

A. Well, it depends --

Q. Or, excuse me, the screening or composite --

A. It depends on what the question you're asking.

If you're asking me as a toxicologist what I prefer to determine health risk, I want the most representative sample of the site. And so if I take one sample of a 220-acre site here, and that's really high, and all these other ones are low, that one high one is not representative of the health risk. What would be representative is the entire site.

So the answer to your question, it depends on what question you're asking. In my opinion, a lot of times composite sampling gives you a better representation of what's present at that site.

Q. All right. Good. Thank you for that.

Let's go -- have you looked at any of the aerial photographs in this case? Because I saw you've got a lot of experience with environmental toxicology and health toxicology.

MS. WHEELER: Object --

MR. JONES: Whoa. Whoa. If you're going to object to his tender, he's a -- let me -- you

said risk assessment, too.
MS. WHEELER: This is beyond the scope of his opinion.
MR. JONES: Beyond the scope? It's cross examination.
MS. WHEELER: You didn't --
THE HEARING OFFICER: I think it's beyond the scope.
MR. JONES: Beyond the scope?
He's an expert in a case with experience in -- I'm going to ask him the obvious question that I asked Mr. Edwards: Do you see these photographs? Have you looked at them? And do you have an opinion as to whether or not the operations on this property had an impact on the environment of this property?
MS. WHEELER: Mr. Balhoff, it's beyond the scope.
THE HEARING OFFICER: That's beyond the scope. I sustain the objection.
MR. JONES: Beyond the scope?
THE HEARING OFFICER: Yes.
MR. JONES: That is completely unfair.
You know that when you have cross

examination of a witness and that witness takes the stand, and he has the ability and the broadness, I'm entitled to ask him those questions. You're not limited by scope in a cross examination.

If we're looking at the rules of evidence, that is a ridiculous call.

THE HEARING OFFICER: He's been under cross examination, and you've been cross-examining him, for example, about data on this addendum that's coming in. That's fair cross examination.

You're asking him about a photograph back in 1941. That's totally outside the scope of what he's been on this stand testifying about.

I sustain the objection.

MR. JONES: All right. Well, note my objection.

It's a bad one.

All right. I'm done.

REDIRECT EXAMINATION

BY MS. WHEELER:

Q. Just a few points.

Mr. Jones had asked you about, some questions

about x-ray diffraction tests, and he had implied that because the x-ray diffraction test that you took was not within AOIs 1 and 2, that it wasn't reliable.

Can you explain, do you believe that your x-ray diffraction test is reliable for determining the form of barium out at the site?

A. Yes, I do.

Q. And why is that?

A. Because there was only two really high hits of true total barium. I collected the second highest because I couldn't get access to the first, and that turns out it was barium sulfate.

Q. You were also asked some questions by Mr. Jones about data that you don't have because it relates to confirmatory sampling proposed in the addendum; and he had asked whether there were any -- what were the constituents that were sampled in, currently sampled in AOIs 1 and 2.

You're aware that the plaintiff sampled a full suite of 29-B, or the near full suite of 29-B in its sampling conducted at AOIs 1 and 2 which started this whole process?

MR. JONES: Objection. Lack of foundation.

That's -- I mean, there's no basis for that.

MS. WHEELER: He's talked about that he

starts with the plaintiff's data, the data --
MR. JONES: It's beyond the scope. I didn't ask about ... I mean, really.
THE HEARING OFFICER: Just hang on a second.
MS. WHEELER: I can lay the foundation on this, your Honor.
MR. JONES: Beyond the scope of my direct -- my cross anyway, regardless --
THE HEARING OFFICER: Mr. Gladney, let me read the question before it leaves me.
Rephrase the question. Ask it again.
MS. WHEELER: Sure.

BY MS. WHEELER:

Q. You reviewed the plaintiffs' expert report; correct?

A. Correct.

Q. And you noted where plaintiffs took its sampling data?

A. I did. Yes.

THE COURT REPORTER: Plaintiffs what?
MS. WHEELER: Plaintiffs took its sampling data?
THE WITNESS: Yes.
MR. JONES: Objection. Plaintiffs took its -- plaintiffs' --

Objection. I don't understand the question. I'm sorry.

Just let her ask the question. Go ahead.

BY MS. WHEELER:

Q. You're aware where plaintiffs took sampling data in AOIs 1 and 2?

A. Yes.

Q. And are you aware of what constituents they ran when they took that test?

A. They ran 29-B constituents.

Q. It was that full suite?

A. I can't tell you if it's the full suite or not.

MS. WHEELER: Nothing further.

THE HEARING OFFICER: Okay. Panel, do you want to meet? Do you want to meet?

We're going to take a brief -- let them meet.

(Panel consulting privately.)

MR. JONES: So I'd like to put this on the record with regard to my objection and your sustaining -- the objection and you sustaining it.

The rules of evidence could not be more

clear under Rule 611, "Mode and Order of Interrogation and Presentation: (b), Scope of Cross Examination: A witness may be cross-examined in any matter relevant to any issue in the case, including credibility."

Couldn't be more clear.

THE HEARING OFFICER: Yeah. Well, I'm going to -- I made my ruling.

I think that when the expert's testifying, you can cross-examine him on the scope of his opinion.

His opinion didn't have anything at all to do with those photographs, those historical photographs.

MR. JONES: I understand your sustaining that objection. I just want to point out that we believe you're wrong and that the rules clearly provide that you're wrong.

MR. CASH: For what it's worth, I think you are correct because it was beyond the scope of his designation and scope of what he's testifying, since we're both --

THE HEARING OFFICER: I made the ruling. We don't need to ...

(Panel present.)

THE HEARING OFFICER: Mr. Campbell, any questions?
MR. CAMPBELL: I have no questions.
THE HEARING OFFICER: Ms. Love, any questions?
MS. LOVE: No questions at this time.
THE HEARING OFFICER: Mr. Pennington?
MR. PENNINGTON: No questions.
THE HEARING OFFICER: Okay.
Dr. Millner, that concludes your testimony. Thank you.
THE WITNESS: Thank you, Panel.
(Witness excused.)
MR. CASH: With the exception of possible rebuttal, that concludes our presentation.
THE HEARING OFFICER: Okay. Mr. Jones, your case.
MR. JONES: Thank you. We're going to call Greg Miller, please.
THE HEARING OFFICER: Good morning, Mr. Miller.
WHEREUPON, GREGORY WAYNE MILLER, having been duly sworn, testified as follows:
THE HEARING OFFICER: Okay, Mr. Jones.
MR. JONES: Thank you.

DIRECT EXAMINATION

BY MR. JONES:

Q. Would you please provide us with your name.

A. Gregory Wayne Miller.

Q. And, Mr. Miller, how are you currently -- what is your current occupation?

A. I'm principal geologist and owner -- one of the owners of ICON Environmental Services.

Q. All right. And where is ICON Environmental Services?

A. Across the river in Port Allen. 2049 Commercial Drive.

Q. And what is the position you currently hold at ICON?

A. I'm corporate president.

And I've got a co-owner who is also a geologist.

Q. All right. Would you just briefly describe to our Panel your areas of expertise.

A. By training and practice, I routinely do projects involving geology, hydrogeology, site assessment, the use of RECAP, and permitting through various regulatory agencies, and remediation of both soils and groundwater.

As a firm, we do the design of groundwater

monitoring systems at solid hazardous waste landfills. We do routine compliance monitoring to determine whether those regulated units have had an adverse effect on the quality of the groundwater.

We also do geological and hydrogeological characterization at those facilities in support of facility expansions.

Typically get involved in routine various site assessments and evaluation of the data utilizing RECAP protocol, and are routinely involved in remediation projects.

As a business, ICON is a Louisiana Response Action Contractor, so we do underground-storage-tank assessment and remediation projects.

Q. What academic degrees do you hold and where did you go to school?

A. I've got a bachelor of science in geology from USL. I did some work towards my master's degree but never completed it at that same university.

Q. And have you been, have you been tendered as an expert in various courts around the state of Louisiana?

A. I have.

Q. And what have you been tendered -- what have you been accepted as an expert? In which fields?

A. I've been qualified numerous times in various different disciplines; but the ones that most often I'm qualified in is: Geology, hydrogeology, site assessment, remediation, and regulatory compliance.

Q. All right. Have you ever not been accepted in those areas by a court examining your qualifications?

A. I've always been accepted as tendered in those areas.

Q. All right. Well, let's talk a little bit about your work, your work history before ICON.

Where did you -- how were you employed then?

A. I was working in the oil industry while in school and for three to four years after I graduated, doing core and log analysis in support of oil well, you know, determining productivity and well stimulation projects; also did some geological reviews for land leasers over in Lafayette before the oil industry crashed in the mid 80s.

At that point in time, I then moved up to the Northeast, working in the state of Vermont doing various environmental projects. Up there there was a very strong emphasis on the interaction of groundwater and surface-water resources. So I did numerous varied projects for both, some heavy industry up there, but

also in support of -- like I worked for, like, Kraft Foods and Ben & Jerry's Ice Cream handling their residuals, waste residuals, that they managed for nutrient recovery in a manner such that you don't pollute surface-water resources.

MR. JONES: Okay. What I'd like to do is tender Mr. Miller as a qualified expert in the fields of geology; hydrogeology; site assessment; remediation, including proposals for same; and regulatory compliance?

THE HEARING OFFICER: Okay. What was after remediation?

MR. JONES: I included proposals for same: Pit remediation and the regulatory compliance.

THE HEARING OFFICER: Voir dire?

MR. CASH: Yes. Because I don't know exactly the scope of where they're going to go, I just wanted to test some of the breadth of his expertise.

VOIR DIRE EXAMINATION

BY MR. CASH:

Q. Sir, you have a degree in geology; is that correct?

A. That's correct.

Q. That's the only degree you hold?
A. Yes.
Q. Bachelor of science?
A. Yes.
Q. You have done some graduate-level work in geology geared towards oil exploration; is that correct?
A. At USL it was all geared towards oil exploration.
I did a six-graduate-hour course from Wright State University in Dublin, Ohio that was geared towards groundwater.
Q. Okay. You have no postgraduate degrees?
A. That's correct.
Q. And the only environmental geology course you've taken is the 6-hour graduate course you've just mentioned; correct?
A. No. I took an environmental geology course in college-- at USL, but --
Q. As part of your undergrad?
A. Pardon me?
Q. As part of your undergrad?
A. As I recall, yes.
Q. You're not an arborist; is that correct?
A. That's correct.

Q. You're not a soil scientist?
A. That's correct.
Q. Okay. How many college-level or postgraduate courses have you ever taught?
A. I just taught a TA field camp one summer. So that was a six-hour course.
Q. Was that a college-level course?
A. Yeah, it was college-level.
Q. Where was that?
A. In Wyoming.
Q. At what school?
A. Well, it was USL. But the field camp was held at -- in South Dakota, at Wyoming.
And Steve Schutz was one of my students, as a matter of fact.
Q. The kids got college credit for that?
A. Pardon me?
Q. The kids got college credit for that?
A. Oh, it was mandatory to graduate. It was a six-hour grad -- well, it wasn't a grad course. It was a standard for undergrad.
Q. All right. Do you have any peer-reviewed articles, papers or textbooks that you've ever authored?
A. No.

Q. Okay. I think you already said you're not an arborist; you're not an agronomist?
A. That's correct.
Q. Not a horticulturist?
A. Correct.
Q. Silviculturist?
A. Well, not by trade.
Q. Never -- you're not a toxicologist?
A. That's correct.
Q. Unlike Dr. Rodgers, who's previously testified, you've never built a wetland; is that correct?
A. That's correct.
Q. Do you intend to testify today at all about root zones?
A. No.
Q. So you plan to give no testimony today about root zones whatsoever?
A. Not unless you ask me a question about it.
Q. I will not if you're not going to go into it. That's a safe bet. That's not in the questions I have.
MR. CASH: Our only objection on the tender would be as to regulatory compliance. I don't believe that there's a scientific specialty on regulatory compliance that would

pass Daubert. That's what this group is to decide is are we complying with regulations.

Save and except regulatory compliance, we have no objection to the tender as tendered.

THE HEARING OFFICER: I'm going to accept him as tendered: Geology, hydrogeology, site assessment, remediation, and proposals for same, and regulatory compliance. The fields of geology; hydrogeology; site assessment; remediation, including proposals for same; and regulatory compliance?

I think the Panel understands it's their function with respect to the issues of the application of the applicable standards to the evidence, but I'm going to accept him as tendered.

MR. CASH: Very well. Thank you.

MR. JONES: Thanks.

DIRECT EXAMINATION RESUMED

BY MR. JONES:

Q. Mr. Miller, have you had an opportunity to review the plan, the proposed Hess most feasible plan that they submitted to the Department on July 14, 2015?

A. Yes, I have.

Q. Have you had an opportunity to review all the data that supported -- that was used to support that plan submitted around July 14, 2015?

A. To my knowledge, yes. I tried to do as comprehensive a review of all the data as I could.

Q. All right. Do you have an opinion as to whether or not Hess' plan submitted to this Department on July 14, 2015, and an addendum was filed on October 23rd, 2015 -- do you have an opinion as to whether or not that plan and its addendum will succeed or fail in terms of getting this property cleaned up pursuant to 29-B?

A. In my opinion, I think that the plan is fundamentally a pit-closure plan for the most part, with the exceptions of AOI 7 and 8, which focuses on NORM remediation.

So, but as far as closure of the pits, I would say, for all AOIs, I think the plan would work, except for AOI number 5.

In my opinion AOI number 5 is a pit location that has been closed -- and there's extensive documentation as per the closure -- occurred 25 years ago. And in my opinion, the exceedances at AOI 5 are related to hydrocarbons. It's an oil and grease exceedance.

But, in my opinion, it's caused by the presence of condensate in the subsurface, that has, has contaminated the cap that was placed on the pit back when it was closed in 1990.

Q. All right. And have you looked at the historical records with regard to when the pit in AOI 5 was closed in the late 80s and then when it was discovered that, in fact, it is contaminated again today?

A. Yes. And I think one of the reasons that that -- there was no discussion in the feasible plan that was submitted concerning just a fundamental understanding of how the contamination exists in the environment out there. It was strictly just a pit closure document.

And there's a very peculiar situation, you know, if it's particular to the site at AOI 5, that could be best addressed looking at what everyone's familiar with, like a conceptual site model. For the most time, you hear that conceptual site model that the EPA would like to see, and you think it's, for the most part, sort of a superfluous exercise. But in this instance, if you don't look at what's going on with the site, you really don't understand how the contamination that was found there came to be.

Q. All right.
A. So what I did is I'm trying to give you as a Panel what I believe is a full picture of what's going on associated with AOI Number 5.
Q. Have you prepared a presentation in connection with that?
A. I have.
Q. All right. Would you explain what you think is going on at AOI 5 in that old pit area.
A. Yes. As I said, AOI 5, you know, was a production pit, closed in 1990.
In preparation for closure of that pit, there was an engineering evaluation that had been performed.
THE WITNESS: Do I have a control of these slides?
MR. JONES: Yeah, you do.
THE WITNESS: This one?
My wife doesn't let me touch the remote either.
BY MR. JONES:
Q. Okay.
A. All right. The engineering evaluation was performed by Hess, as I said, in preparation for evaluating what to do with the pit with the pending 29-B regulations.

Soils and foundation engineers performed it. And as this cover shows, they noted that the pit was experiencing considerable seepage.

And the boring logs associated with the study show that, at the soil profile, down to a depth of 10 feet, that it was not comprised of clay and silty clay. It was silty sand lenses, with some presence of organics that were noted.

This cross section shows the depth of the production pit was 8 feet below the top of the berm, 6 feet below ground surface.

So that's all important engineering data to show you what was in place at the time that the waste-management unit was in place.

The pit was closed in 1989, and it was closed by removing the pit contents. And as you can see on this form that, you know, the DNR Inspection Form classifies this site as an elevated wetland.

This next slide here shows two things: One is an AFE that was submitted internally to -- and to Hess for approval for additional funds that were required to complete the closure of the pit to get additional sludge out of the pit. So they encountered more sludge than they originally anticipated.

The next is a letter dated 1992 which

apprizes on the status of land-forming of pit contents on a 5.5-acre parcel.

So this documents that the materials were taken out of the production pit back in 1990. So the material was removed from the pit.

Q. And why is that important?

A. Because we're still finding regulatory exceedances of oil and grease at that location. And if all of the material is documented to have been removed, well, then how did -- how are we stuck with an exceedance today?

So I'm looking at attributes of the site that might be able to answer this. And a good conceptual site model looks at contaminant migration pathways and various methods that you can use to show what's going on at the site.

And again, here's another EPA description of what goes into a conceptual site model. Basically, you're describing all known and suspected sources of contamination, identifying receptors and pathways.

And there is a discussion here of what is often called a primary and secondary source. Primary source is generally the act that caused the release.

Secondary sources are the results of that, such as soil and groundwater contamination.

First thing I'm going to look at is publications on geology of the site. This is an LGS, excerpt of an LGS map that just shows the quaternary deposits of the side.

The brown is mapped as HNL, which are natural levee deposits. It's part of a distributary system that has been mapped in this area.

The distributary system is what we are finding in the boring logs when we do all the boring log correlations that comprise a zone of subsurface water or groundwater that is contained beneath the surface of the property.

This next slide shows all the various AOIs depicted on a 2000 -- excuse me, 1984 image. And then there's a blue line that I have drawn extending from east to west. That is the location of a cross-section profile.

This is a cross section of what the subsurface looks like based on correlation of all of our boring log data.

What we find are there are two shallow groundwater zones which are hydraulically connected. These shallow zones were deposited as a distributary system that undulates in its depth below ground surface. It achieves a maximum thickness of about

15 feet that pretty much extends from a southwesterly to northeasterly trend.

This next map is pretty critical for AOI 5. I'm depicting two different types of information here. One is the depth to the top of that shallow groundwater-bearing zone.

Q. What is that depth again, Mr. Miller?

A. It's the depth to the top of that groundwater-bearing zone.

So where the contour says 6, you would expect to encounter that groundwater zone at a depth of 6 feet below land surface. And we determined this by the point of first resistance of sampling equipment, because many of the borings were performed sub-aqueously, done beneath water. So there was some water depth that had to be accounted for.

So everything is mapped according to, you know, the top of the sediment, even if it's below water.

Q. So you can see there's -- the 2, 4, and 6 contours show sort of a ridge where the top of the water-bearing zone is encountered at a very shallow depth.

In the vicinity of AOI 5, which is located on the west end of the blue ellipse that is on the lower

one -- that's AOI 5 -- the blue represents dissolved benzene in groundwater.

We found two pockets of benzene in the shallow groundwater. One of them coincides with the location of AOI 5, the old production pit; that, when you look at the depth to the top of the water-bearing zone, it's evident that the pit, which had been constructed to a depth of 6 feet below ground surface, had been constructed directly into that shallow groundwater-bearing zone.

Thus, the pit contents had seeped into that shallow groundwater-bearing zone, and we're left with dissolved benzene in the groundwater, in contact with the pit backfill.

This next map --

Q. Let me stop you there.

So do you have an opinion as to whether or not the AOI 5, as it existed in 1987, was in contact with the groundwater beneath that pit?

A. Yes. Yes.

Q. As proposed in the remediation, do you have an opinion as to whether or not the soil in that pit that would be excavated and then replaced would be in contact with groundwater?

A. It likely would. But even if they terminate

the excavation at the water interface and replace a clay cap in there, the fact that it's benzene, it's volatile.

We see this a lot in underground storage-tank assessments where we'll have benzene traveling in shallow groundwater in a similar situation to this. And the volatilization of the benzene will accumulate, particularly underneath a building slab, concrete slab, and re-saturate shallow soils.

We've seen it in several locations where a convenience store will have a floor drain and no P-trap, and all of that benzene will pool -- the vapors will pool underneath the slab, contaminating the shallow soil, and you get vapors entering the convenience store.

And that's usually the first sign that there's an issue. You know, the workers complain: "Hey, we're smelling gasoline." That was the first indication of a release.

At those types of facilities, if the store is going to be demolitioned, you know, for replacement, we typically address those -- that shallow soil contamination by excavation.

If the store is going to remain in place, we typically go in and do something like a dual-phase

extraction, and pull both vapor and fluid out of the subsurface to pull vapors from the soil.

So it's something we encounter quite a bit and it's a well-known phenomena as a behavior of benzene.

So, in my opinion, that's exactly what has happened here. The pit contents were originally removed, sent off-site for landfill. They came back in with a clay cap; and the benzene in the groundwater has recontaminated the clay cap that was placed in the pit.

This is another map of TPH-diesel. And again, there's -- the highest concentrations are in the vicinity of the AOI 5 pit.

And this is TPH-gasoline.

So we've got volatile constituents, which likely are coming from condensate as the most likely source.

In order to make sure what I'm looking at is recontamination and not residual contamination that may have been left in the pit, I looked at the boring log data.

Q. Tell them why the boring log data is important.

A. Well, because, typically, when we see a pit that has not been completely closed in compliance with

the standard, you'll see evidence of residual oil and grease in the pit contents. It's visible. You can see it.

So what I did is, you know, the borings that show oil and grease exceedances include RS1, and then SB2 and 3 that were done by what was CRA at the time.

This is the RS1 soil boring. And we encountered clay and silty clay down to a depth of about 5 feet; and then we entered the top of that aquifer, which is a silty sand.

The lines on the left-hand column show relative electrical conductivity of the soils. So you can see that we've also got salt contamination associated with the former use of the pit.

The CRA borings were only done to a depth of 5 feet, and they don't describe any residual contamination either. It's just the backfill of a gray silty clay.

So their boring logs are consistent with the RS1 boring log. So I see no evidence that there's residual contamination left in the pit.

This is a map of groundwater flow direction in the shallow pit, and it's showing a hydraulic mound. This was constructed using depth-to-water measurements in all the on-site monitoring wells, and that data were

corrected for density effects; because the more salt contamination you have in groundwater, the lower the apparent hydraulic head as compared to uncontaminated water. So you have to make a correction.

And we had up over 30,000-milligram per liter chloride contamination in the shallow groundwater zone.

So I see no pit residuals on the boring logs. We have contamination today, and good documentation that the pit contents were completely removed in 1990. So I come to almost certain conclusion in my mind that we're dealing with a recontamination issue.

And if you don't address the contaminated groundwater and just go in and remove that 2-foot or 4-foot clay cap that's in the pit and replace it, it's going to become recontaminated.

The contamination, it's going to -- it's going to change phase from adsorb to soil to dissolved in the groundwater; it will go back and forth in response to water table fluctuations.

Q. All right. Let's change gears here for a second and talk about the property itself.

MR. JONES: Connie -- oh, you've got it. I'm sorry.

BY MR. JONES:

Q. All right. Are you familiar with this

document?
A. Yes, I've seen it.
Q. All right. How does this relate to any of your opinions in the case, Mr. Miller?
A. As I recall, I think this is the boundary of what Mr. Frank Edwards drew as to the limits of what he felt was an impounded area, as I understand it.
Q. All right. And your understanding is that this is what Mr. Edwards, who testified earlier in this procedure --
You were here when he testified; correct?
A. Yes, that's correct.
Q. And you were here when he testified that he drew this outline and said that he believed that the oil and gas operations contributed to the impoundment of this area; is that correct?
A. That's what I understand, yes.
Q. Okay. All right. Do you agree or disagree with Mr. Edwards about this area being affected by or impacted by oil and gas operations?
A. For the most part, I agree with it; but I differ on some of, some of his boundaries.
Q. Why don't you tell our Panel about that.
A. In general, I think his impounded area is fairly accurate. But I think that the field road,

which is evident on the west end of what he drew, is functioning as a levee system. I mean, the road, as he said, was 2 1/2 feet higher in elevation than the surrounding land surface.

Q. And where is that road? Can you point it out with your red button there?

A. Where's the red button?

Q. I thought there was a red button on one of them.

Or there's a button that gives a red dot on the --

A. That's what I'm looking for.

Nope, that's not it.

Q. Uh-oh.

THE WITNESS: Where is it?

MS. NICHOLS-PHILLIPS: On the top, there's a little --

Do you see it?

THE WITNESS: Like I said, my wife doesn't let me touch the remote.

MS. NICHOLS-PHILLIPS: Here's one you can use.

THE WITNESS: There you go.

BY MR. JONES:

Q. All right. Whenever you get back to the

right page.

A. All right.

Q. Okay. You were talking about the surface road that you had a slight disagreement with Mr. Edwards on.

A. Correct.

Q. Do you see where that surface road is?

A. There we go.

So the road I'm referring to is the field road.

So the field road is east of AOI I think 3, 4 and 5. I think that this field road forms the western boundary of what has essentially become an impounded area. And I also think that this access road to this well location, which was drilled I think sometime in the late 60s, if I'm not mistaken, has for the most part completed the boundaries of what could be construed as at.least. a levee or a restriction in surface water flow.

Q. Uh-huh.

A. Because this road, which is also elevated, meets up with the spoil bank of this north-south canal, which meets up with the spoil bank of the east-west canal, which meets up with the field road.

So you end up with what I believe to be a

restricted basin within Mr. Frank Edwards' overall area of impoundment.

Q. Well, if you go out there on the property and you observe the trees and the difference in vegetation, would that be consistent with your opinion there?

A. The existence of the trees is consistent with that opinion, as well as where we found contamination in soil, in our soil-boring program.

Q. Well, let's -- did you look at any of the aerial photography to ...

A. Yeah. Just looking at the history of the site, you can see that this -- this is a 1941 image. And at this point in time, the location of the well on the north-south canal was accessible only by water, so there was no access road going to that well location. So you have somewhat restrictive conditions on this date.

By 1953 we're seeing all kind of features. One is this actually looks like a big depressed area with a small pit feature inside of it, which likely coincides with the location of a flare pit.

And again, at this date there's still no road accessing this particular well location on the north-south canal.

And we're starting to see degradation of

trees in the vicinity of east of the tank battery and surrounding this flare pit.

By 1973 you see a marked change in the surface. This absolute total change. And there's no more trees; there's flooding conditions. And you do now have this road that goes to the well location on the north-south canal.

So by this date you have completed the berming of this large basin feature.

So just a look at historical photography, and in concert with the development that occurred through time, you start seeing the most devastation once this basin has been completed in its construction.

Q. Okay. Now -- Well, we'll go to your salt contamination in just a second.

All right. So have you taken a look at this, and have you looked at the various AOIs that Hess has identified?

A. I have.

Q. Do you think they missed any inside of this area that you're referring to?

A. Yes. As a matter of fact, I think we missed some AOIs as well.

I mean, this, this whole area east of the access road -- what I'm going to refer to as the

basin-like area -- it's currently, for the most part it's inundated and it's a flotant marsh currently. The hydrology, in my opinion, has been altered. So it's artificially being controlled by the presence of roads and dredge spoil from the canals.

Q. Well, do you have an opinion, before we get to the other AOIs, as to why and what caused this to be hydrologically altered in this area reflected in 1973?

A. It's a combination of dredge spoil from the canals, to completion of the field access roads, and the discharge of produced water into this basin-like feature.

Once the produced water was released into this feature, and its -- particularly it being denser than freshwater, it had nowhere to go but pool in this area and do damage to both the soil and the vegetative life.

Q. Do you have an opinion as to whether or not the oil and gas operations had an adverse environmental impact -- the same question I asked Mr. Edwards -- on this area east of the access road?

A. Absolutely.

Q. Okay. All right. Let's talk a little bit about the AOIs that you believe that Hess did not address.

A. Okay.
Q. AOI 9.
A. That's what I'm calling AOI 9.

Mr. Frank Edwards said that we had -- ICON had a boring up east of the tank battery that had an oil and grease exceedance. He said they went back and tested in the same area and they did not find an oil and grease exceedance and concluded that the new data supersedes the old data.

And this pit that I'm pointing to right here is the subject matter of this evaluation.

Again, EPA conceptual site model -- they kind of discuss this. They state that: "As a consequence, if new data are inconsistent, either the data needs evaluation or the model needs to be revisited."

This is the location of the boring data.

The exceedance we had was at a boring called RS12. We had oil and grease exceedance from a depth of zero to four feet at the same location of that pit that we just saw on a previous image.

Mr. Frank Edwards' group went out and he said they did borings in the same location; but this is where their borings plot, which are not at the same location as RS12, which is not hard to understand.

You're trying to do borings from either an

airboat or walking on flotants. It's really hard to get right back on the former location with any accuracy, so it's not surprising.

So essentially they went back and tested at a location that was different from ours, and it looks like their locations are immediately outside of that former pit feature.

Here's the same look at -- on a 1983 image. So you can see the borings.

As a matter of fact, even our boring shows up on the north levee of that pit feature, and their borings appear to be on the south and to the west of that pit feature.

So, in my opinion, I think our data is valid and indicates that we have a problem AOI in that area with that former pit. If nothing else, it should at least require additional sampling of this area to confirm what I believe to exist, the conditions that exist out there.

Q. Okay. Let's move on to the salt on the property.

What effect -- what has been the effect of the salt on this property, Mr. Miller?

A. It's obvious from just looking at the site and from aerial photography that the site used to be a

cypress forest, that no longer is, within the impoundment area. And you can still see cypress stumps on the property.

The entire area east of the road and the impoundment area is currently inundated for the most part and flotant.

I don't know whether the flotant's rooted into the substrate or not. We didn't make that evaluation.

Q. You're aware that Hess has admitted on the 220 acres or thereabout liability and responsibility for the soil, including the submerged wetlands, on this 220 acres; correct?

A. Yes.

MR. CASH: Objection. The question mistakes the position.

BY MR. JONES:

Q. You are aware, and I think you just said a few minutes ago, that a large part of this flotant marsh is indeed submerged because of the hydrology alterations on the property. Is that correct?

A. That, and I think we've actually seen a destruction of the actual soil substrate within the impoundment area due to the produced water discharges. So it's a combination of the two.

Q. All right. So how does this, how does this adverse impact on the environment as a result of the oil and gas operations, how does that work in 29-B?

You-all know I work a lot of these cases, and it always comes back down to the definition of contamination: "Introduction of substances or contaminants into a groundwater aquifer, a USDW, or soil in such quantity as to render them unsuitable for their intended purpose."

I was charged on this project with evaluating the site, with the goal of restoring the property to its former intended use, which was a cypress forest.

Big difference between a beautiful cypress wetland in Louisiana and a flotant marsh, huge difference as far as diversity and usability. You can barely walk on a flotant marsh. You can hunt and enjoy, you know, beautiful cypress, you know, swamp in Louisiana. It's some of the most beautiful wetlands we have.

So to say that it's a vibrant, healthy flotant marsh, I don't disagree with that, but that's not what the property was historically.

Q. Well, was the location of the particular contamination important in your opinion in this case in regard to getting the property back to its intended

use?
A. Yes.
Q. All right. Do you want to explain that?
A. Again, the 2004 image will again show relative forested features on this date. And you can see that, by 2004, we have no trees in the impounded area. It's -- and it's flotant marsh on this date.
There are a few cypress carcasses that stick out through the flotant, but not many. About five, six, somewhere in there. I'm still not sure what happened to all the cypress carcass, you know, the bowl that should be left on the trees -- from the trees.
Q. Did you take a look at that exact area from the east of the -- east of the tank-battery area and north of that access road, kind of where the wishbone to the right goes, did you take look at the contamination levels in that particular area as it relates to getting the property back to its intended use?
A. We did borings all throughout this flotant impounded area.
Q. And is it your understanding that this is the area that Hess has admitted liability or Hess has submitted the limited admission for?
MR. CASH: Object to form of the question.

Misstates the scope.
THE WITNESS: It's my understanding Hess admitted --
THE HEARING OFFICER: Wait a minute. Wait a minute. Wait a minute.
MR. CASH: There's a difference between responsibility for purposes of the limited admission and liability. And I just don't want these questions to get played back in a trial without my objecting to them.
MR. JONES: I wouldn't do that.
MR. CASH: I agree.
THE HEARING OFFICER: Okay. The question is is it's your understanding that this was the area that has been submitted --
Okay. I understand.
The objection is the word "liability" instead of "responsibility." You have -- Hess has -- this is the area that Hess has submitted responsibility in the limited admission.
Is that --
MR. JONES: That's the question.
BY MR. JONES:
Q. Are you aware that this is the area where

Hess has admitted responsibility for -- to clean up to whatever standard this Panel believes is necessary?

A. Yes.

Q. Okay. All right. Did you take a look, did you take a look at the salt contamination in this hydrologically impacted area here?

A. Yes. We looked at -- as I said, we performed borings. We did screening surveys. We did terrain conductivity surveys throughout this area; sampled for heavy metals, salt, petroleum hydrocarbons, oil and grease.

The next slide shows a map on 4-foot increments. And I chose 4-foot increments just because the samples were collected on 4-foot increments using either hand equipment or geoprobe data.

So that shows the relative extent of salt exceedances that exist between the depth of zero to four feet.

The SAR at this horizon extends a little bit further, as compared to the EC, just from a surface area standpoint, which is what we typically see in older releases. Because the sodium that is measured by SAR reacts with the clays. It binds with the clays due to the cation-exchange capacity of clays. Whereas the chloride portion doesn't bind with the clays and

typically gets -- flushes, it flushes either out into the surface water or its underlying groundwater. So that's typical of an older spill.

The next horizon, 4 to 8, we're seeing SAR and EC exceedances throughout that impoundment area, or at least the northern portion of it. And for the most part, the SAR and the EC are -- encompass pretty much the same surface area; with the exception of just east of AOI 5, it appears that the SAR is more extensive than the EC.

At 8 to 12 feet, we see the opposite: We see the EC encompass a larger area than the SAR; and that's because, at this horizon, we're starting to get some influence of soils that are occurring within that shallow aquifer.

So this area down where I'm pointing here, which is just to the east of AOI 5 and northeast of AOI 4, likely represents -- for the most part, it's produced water that is bound up in the shallow aquifer.

But, like I said, we've got 30,000-milligram-per-liter chlorides in the groundwater; so the soil samples that were collected from within the aquifer materials are going to reflect what appears to be more recent contamination because this produced water is just pooled in the subsurface.

Q. All right. Now, taking all this out, as a result of all the samples, did you take a look out on the property as to -- or do you have an opinion as to in fact what is currently submerged versus what was historically an elevated -- a wetland?

A. Yes. I've looked at all the AOIs.

You don't see AOI 1 or 2 listed there because I didn't physically visit those, but I've seen the rest of these. And I'm of the opinion the site was originally not a submerged wetland because it was cypress forest.

You can't get cypress seedlings to survive in a currently submerged environment.

MR. CASH: Excuse me.

I'm going to object to his expertise on cypress seedlings and whether or not they can reproduce or regenerate.

He hasn't been offered as an expert on cypress trees, cypress seedlings, or anything else. So that's beyond the scope of his designation on cypress trees.

MR. JONES: We don't even have a debate that it was a former cypress -- their guy said it was a former cypress forest out there. It's not even a dispute in this matter, that it

was a former elevated cypress forest.
MR. CASH: I mean, we certainly have debate on as to why. And he says, his opinion, cypress cannot regenerate in a submerged condition. He does not have the expertise to give that opinion.
THE HEARING OFFICER: I think that statement was made all throughout your plan at various points. I mean, I'd have to go back and look at the material. But I didn't think there was a dispute about, if it's inundated, it can't regenerate. I thought that -- I read that stuff in the material submitted by Hess.
Follow up? Is that not true?
MR. CASH: I don't think you read that in the material submitted by Hess, but that -- let’s say you did.
THE HEARING OFFICER: That's the only material that was submitted.
They submitted a five-page letter, and I'd have to go back through --
This is not a big, this is not a big point. This is their whole, this is the whole debate that they have with Hess, whether it's --

I said at the very beginning, you know, the Panel is going to decide about the relevance of it. But isn't this the whole debate?

MR. CASH: I've made my objection as to his area of expertise.

THE HEARING OFFICER: I'm going to let him answer the question.

BY MR. JONES:

Q. All right.

A. Yes, I'm relying on numerous publications from the U.S. Forest Service and technical publications that make that statement, that, you know, a cypress -- that cypress forest -- seedlings from cypress cannot regenerate in continuously submerged conditions.

Matter of fact, I'm going to show a reference to a paper that suggests that they can't endure inundation for longer than 45 days before suffering mortality.

Q. Okay. Let's go -- let's walk through AOI 3. Did you visit this particular site?

A. Yes.

Q. All right. Do you have an opinion as to whether that's an elevated or a submerged wetland as we speak today?

A. In general, it's elevated in my opinion. Again, this AOI 3 is west of the north, the north-south field access road. So no doubt east of the road it's flooded flotant marsh; west, not so.

Q. What about AOI 4?

A. Same, that's on the west side of the road.

Q. What about AOI 5?

A. AOI 5 looks submerged within the confines of the former pit boundaries, but you can walk to that from the road.

So southeast of the pit, the subject of AOI 5, it's high and dry. You can walk to it.

You get to the former pit and that's what it looks like. It looks submerged because it's not completely backfilled.

AOI 6 is east of the road, and you can see the nice uniform elevation of the flotant vegetation. I mean, it's floating on water. It's going to look like this: Steady, horizontal top to the vegetation. That's typical of a flotant.

You don't see that in any of the previous photos.

Q. Okay.

A. AOI 7 and 8 are NORM issues that are located on pads, well pads. So by definition those are

artificially elevated, so they are not in a submerged area.

And this is, this is that reference I just made mention. This is from a publication that was submitted to the governor I think about eight years ago, "Conservation Protection and Utilization of Louisiana's Coastal Wetland Forests."

And it suggests that baldcypress seedlings can withstand complete inundation for up to 45 days, but long-term flooding above the foliage results in high mortality.

So I'm not an expert in biology, but this is -- this fact is repeated throughout the literature.

MR. JONES: I'm going to switch gears into another topic. It will take -- I probably have about 20 more minutes for the whole thing.

Would it be all right if we took our morning break this morning?

THE HEARING OFFICER: Fifteen minutes. We'll come back.

(Brief recess taken.)

THE HEARING OFFICER: Back on the record. Mr. Jones.

BY MR. JONES:

Q. Thank you.

Now, have you -- we talked about your soil analysis and salt contamination in the area we're identifying as east of the tank battery.

Have you taken a look at the regulations and requirements from the Department with regard to cleaning up that salt?

A. I have.

Q. All right. Would you explain what your opinion is with regard to how the regulations unfold with regard to the salt contamination?

MR. CASH: Again, Tom, we would object to him interpreting the regulations. That's not the place of an expert witness.

The Hearing Officer and the Panel have to apply the regulations. There's no expertise in application of the regulations.

THE HEARING OFFICER: Wait a minute.

Before --

Can you get this thing going for me?

I got it.

Okay. I understand your objection. And he's not the final arbiter as to what the regulations say. Your witnesses have testified about RECAP and other things.

I'm going to allow that question.

I understand that this Panel is going to make the decision with respect to the application of these regulations to the evidence.

So overruled.

MR. JONES: Thank you.

BY MR. JONES:

Q. All right. Proceed.

A. Believe me, I've heard -- I've heard the arguments numerous times.

There's probably no bigger opinion, I think, this Panel is going to render than -- I just ask that whatever you guys do, make it a very clear opinion as to regulatory interpretation because it's going to matter to a lot of landowners.

I personally can't see how 29-B couldn't apply a salt standard to the submerged freshwater wetlands. I mean, just in a coastal zone --

MR. CASH: Tom, I'm objecting.

This is now a soapbox speech. This isn't an answer to a question.

MR. JONES: That's right.

MR. CASH: No. This is absolutely -- I implore you --

THE HEARING OFFICER: I'm going to overrule the objection.

Totally he's an expert, he's giving an opinion. This Panel is going to make their decision.

BY MR. JONES:

Q. Tell them why it's so important.

A. There's no doubt, produced water discharges can completely devastate a freshwater wetland, even if it's submerged. I mean, that's clear from just looking at the aerial photography at this site, that a mature beautiful cypress swamp is not a flotant marsh. They're two totally different environments.

We've got 1.2 million acres of submerged fresh, freshwater wetlands in a coastal zone alone. I mean, that's a lot of territory.

All I can do is read 29-B and interpret it as a person who deals with regulations for a living. And this right here says: All E&P waste must either be disposed of on-site -- you can use it downhole in fracture stimulation and P&A work or send it offsite.

I'm of the opinion that the salt contamination that I found in soil on this site is an E&P waste. So one of those three have to --

Q. Let me ask you a question.

Is there really any doubt in your mind that salt in all these plumes at zero to 2, zero to 4, zero to 8 feet, is E&P waste?

A. I mean, there's no doubt in my mind.

Q. Okay. Go ahead.

A. But as I've also testified, there are no listed salt standards in a submerged wetland for the land treatment protocol.

So 29-B lists, I think, four different options of on-site treatment. One of them is land treatment.

From my appreciation of the plan that was submitted, land treatment was not the option that was chosen.

Burial or trenching is another option that's available. Again, from what I heard Mr. Edwards testify, site conditions are not conducive for burial or trenching due to the water table conditions.

I'm of the opinion that all of the salt contamination in soils as it exists today is a buried waste. It's buried on the site. But the site doesn't comply with either the salt, the EC standard or hydraulic conditions.

Solidification is similar. You still have isolation requirements to groundwater. And again, this

site doesn't meet the conditions; and, as I appreciate it, that was not the methodology that was selected for in the plan.

On-site land development, I read this -- I see no reason why this could not be used in a submerged wetland. It doesn't say that you can't. There are no criteria to prevent a landowner from agreeing to use E&P waste as landfill material to build a pad for a camp, and there are salt criteria associated with this option.

This is not what was chosen in the plan.

Q. What is the salt criteria?

A. For on-site land development, you have to meet an EC, an electrical conductivity of 8.

Q. And what did you find on this property in the area that has limited submission for soil and in-site submerged wetland responsibility?

A. I don't recall the high offhand, but it was not uncommon to get ECs of 25 to 35.

Q. All right.

A. Offsite disposal. This is the option that was selected in the feasible plan that was submitted. They chose to go offsite with the E&P waste.

I read this and it says, the criteria for all of the previous options we just looked at -- land

treatment, burial, solidification, on-site, generation of reuse -- the criteria will apply as appropriate to the on-site disposal of any waste remaining on site.

So I look at this and I can't see how salt couldn't apply because it's an E&P waste, it's remaining on-site. 313.I.2 says that the criteria for all the other techniques shall apply.

Q. Is it limited there to submerged or elevated or anything like that?

A. The only place that I see in 29-B other than the definitions where there's a distinction between submerged and elevated wetlands is in the land treatment standard, that protocol.

Q. Is land treatment proposed here?

A. It is not.

Q. In any form or fashion have they proposed land treatment on this 220 acres?

A. It is not.

Q. They're just planning on leaving all the salt out there; right?

A. That's correct.

Q. Now, I really want to -- I want to make sure that you explain to this Panel. I mean, is there any question in your mind that that salt that you've been identifying in all of these areas is coming from E&P

waste?

A. There's no doubt.

Q. Okay. All right.

Did you calculate a salt standard for the soils out here on the property to support cypress revegetation?

A. I did.

Q. Okay. Would you explain that program please.

A. Yes. As you-all know, I'm involved in a lot of these cases.

MR. CASH: Objection. Objection.

Now he's about to testify, if you let him, to the salt standards necessary for the health and fitness of cypress trees.

Now, he is not an expert on cypress trees. And if he is going to do this, I need to voir dire him on cypress trees and root zones and everything else.

And I asked him at the beginning if he was going to talk about root zones. And he can't talk about regeneration and salt standards without talking about it.

I also can voir dire him on the testimony he's given, that he's not the guy to talk about what stresses trees or health.

And they're fixing to try to get him to testify on the salt standard for cypress trees out there.

MR. JONES: Actually, we're not --

MR. CASH: Let him -- read the question.

MR. JONES: What we're asking him is, is did you do a literature review to see --

Hold on for a second, Mike. Let's do this one at a time.

MR. CASH: All right.

MR. JONES: I am going to ask him: Did you go back and look at literature with regard to soil as to what the content of salt needs to be at in order to do the regeneration of cypress? That's it, the soil concentration.

I have a next expert that's going to come in and say: In fact, that's correct; you need to get the soil to that level so that you can regenerate these cypress areas. Very simple. It happens in every single case.

MR. CASH: No, it doesn't. I'm not going to start -- I don't let people who have basically no expertise say: I read a book or I stayed at a Holiday Inn Express and here's

my opinion.

He can't pull literature and read it to you-all. You have to have some area of expertise that qualifies you to give an opinion on the salinity which will support cypress trees. He doesn't have it.

Now, if the next guy does, then qualify him; but this guy doesn't have it.

If you let him opine, then what we will do -- and I guarantee we're going to have rebuttal -- is we will just open it up to whoever I can find and go read something on this.

MR. JONES: Perhaps. Then we'll be here all day.

MR. CASH: All week.

MR. JONES: I don't think we'll be here all week.

This is simply a study talking about soil content and how to get -- what you need to target your cleanup standard to. That's all there is.

He's not offering an opinion whether the cypress died as a result of this.

We all know the answer to that, but --

MR. CASH: He's offering an opinion as to whether or not -- as to what EC is necessary to support cypress growth. That isn't --
THE HEARING OFFICER: I'm going to sustain the objection.
BY MR. JONES:
Q. Do you have an opinion --
Hold on one second.
MR. CASH: Do you want to pull down the slide, please.
BY MR. JONES:
Q. Two final questions: Did you ...
Well, let me ask you this.
MR. JONES: Let's go back to the -- let's go back to the 1973 document, if we can, Connie, which I think is -- yeah, 23.
Can I see this pointer, please.
Which one have you used?
THE WITNESS: This one.
BY MR. JONES:
Q. So, Mr. Miller, I want to make sure I get this right.
I'm going to point out this area right here -- this is the path -- the roads right in this general area right here.

Would you agree with me that, as we sit here today, this property meets the definition of an inundated wetland that I just pointed out?

A. It does today, yes.

Q. Now, you didn't submit a plan on behalf of Raceland; is that correct?

A. That's correct.

Q. Would you tell the Panel why you didn't?

A. In my opinion, you cannot address the contamination left on this property by focusing strictly on soil due to the contaminant interaction between soil and groundwater at AOI 5.

If you don't address the groundwater in concert with the soil, in my opinion, you can never remediate AOI 5.

And, really, it's -- I'm of the opinion that it's -- I don't see how you can make a limited admission for one media because you can only, you know, admit to what -- to an action. And the contamination is a result of the action.

So a plan just focusing on digging up dirt and moving it away with blinders on, without understanding site conditions, is going to fail.

MR. JONES: Okay. That's all I have for Mr. Miller.

Thank you.

THE HEARING OFFICER: Mr. Cash?

CROSS EXAMINATION

BY MR. CASH:

Q. Mr. Miller, I wasn't around when you had your epiphany on 29-B, but let's see if you agree with me.

There is -- under Statewide Order 29-B, there is no soil parameter for an inundated wetland.

Do you agree with that or disagree with that?

A. I agree with that for land treatment. That's the only --

Q. Land treatment. That's not the question.

Here was my question: Would you agree with me that, under Statewide Order 29-B, there is no salt parameter for an inundated wetland?

That's the entire question. Do you agree or disagree?

A. I agree.

The only place within 29-B where there is a distinction between submerged or elevated wetland is in the land treatment standard. You won't find it anywhere else.

Q. And the salt that you're talking about removing is all in what you say is now an inundated wetland, isn't it?

A. No. With the exception of the AOIs that are west of the access road, there is some salt contamination associated with those as well.

Q. And are any of the AOIs west of the access road within the 220 acres that are the subject of this limited admission?

A. Yes, your AOIs, I think you've got three west of the access road.

Q. And what are their names?

A. 3, 4, and 5.

Q. All right. So let's talk about -- you said you went and you -- you have determined that they are elevated wetlands; correct?

A. Yes.

Q. Okay. Now, you heard Dr. Rodgers testify? You were here?

A. Yes.

Q. All his expertise in wetlands, building wetlands, awards for mitigating wetlands.

Have you been recognized by anybody for your wetlands work, any organization or governmental entity?

A. I have not.

Q. Have you ever built a wetland?

A. No.

Q. Have you ever been consulted by the EPA about

wetland mitigation and wetland remediation?
A. By the EPA? No.
Q. Yes, sir, by the EPA.
A. No.
Q. All right. Do you have an educational background in wetlands?
A. I've done, I've assisted with the hydrology --
Q. That wasn't my question.
A. Hydrology and soil --
Q. Do you have an educational background specifically in wetlands?
A. I've taken no courses, but I've done wetland delineation work.
Q. Well, you understand educational background means actually taking courses, not just what you've gone out and done. Right?
A. Correct, yes.
Q. Thank you.
All right. Now, all these areas of interest that you talked about and you've given opinions on, how many site visits have you done on this property?
A. I've done one.
Q. One?
A. Yes.

Q. You were out there one day?
A. That's correct.
Q. And on your one day you were out there, there were some dry spots you saw; right?
A. Well, there were -- I was looking at access to the AOIs.
Q. On the one day you were out there?
A. That's correct.
Q. All right. And you understand that an inundated wetland, submerged wetland is normally -- not constantly -- but normally submerged; right?
A. Correct, where you only have levee material available for mixing to close the pit.
Q. Now, Mr. Jones brought up a good point. He said that -- he asked you about your plan.
In fact, in connection with this, you guys have formulated a remediation plan, haven't you?
A. We have.
MR. JONES: Objection. Beyond the scope.
MR. CASH: He asked him about it.
MR. JONES: He's asking about a plan.
You said --
Hold on.
THE HEARING OFFICER: You were asking him why he hadn't submitted a plan.

MR. JONES: I did ask him why he hadn't submitted a plan.

THE HEARING OFFICER: Overruled.

BY MR. CASH:

Q. All right. Part of that plan dealt with soil, didn't it?

A. Yes.

Q. And part of that plan includes the 220 acres we're talking about here; right?

A. Correct.

Q. And, in fact, you set that plan out -- oh, your plan is compliant with 29-B, I assume, the one that you-all did? Or is it not?

A. It's been awhile since I looked at it, but I think we had several versions.

Q. Oh, you did?

A. We had several versions.

I know that in one instance we were targeting to remediate groundwater to the background 29-B standard. Another was to target groundwater remediation to meet the threshold salinity, the published threshold salinity that's safe for cypress regeneration.

So we had two different versions of groundwater. We may have had two different versions of

soil excavation as well.

Q. So as you sit here today, you can't tell me if you-all's plan is 29-B compliant?

A. Well, obviously, the ones where we're not cleaning up to background would not be 29-B compliant.

Q. Your expert was set out -- in fact, an original plan dated 3/5/14 and two supplemental plans dated 4/3/14 and 8/5/14. Correct?

A. I recall three, yes.

Q. Right.

And you and Mr. Wayne Prejean authored those plans, or that plan; correct?

A. That's correct.

Q. All right. The soil component of your plan in Version 1 was $137,492,753, wasn't it?

MR. JONES: May I make an objection?

I asked him about a plan, so he gets to go through all, the entire plan? I mean, is that --

THE HEARING OFFICER: I'm going to overrule the objection.

You did ask about the plan.

MR. JONES: I asked why he didn't do a plan -- why he didn't submit a plan in which the law --

THE HEARING OFFICER: Overruled.
MR. JONES: Well, just can I make my record?
THE HEARING OFFICER: Okay.
MR. JONES: I mean, that's all I'm asking to do. Can I make my record?

We're objecting on the basis that the law does not require a plan to be submitted.

I asked him a simple question: Did you submit a counterplan to the plan that Hess submitted on July 14?

That doesn't -- and I didn't ask him a single thing about his plan leading up to this. That doesn't open up the door to go back and allow him to cross-examine him on the whole thing based on your decision 30 minutes ago, which is beyond the scope.
MR. CASH: And based upon the rule he read from --
MR. JONES: Let me just read a rule again. I've cited 611 last time. I'm going to read another one.

633, "Notice of Hearing and Continuing Hearing. Cross examination shall be limited to questions concerning the testimony and exhibits presented by the witness, testimony

and the exhibits presented by other witnesses and credibility of the witness."

MR. CASH: "And credibility of the witness." And he's got a plan that's $137 million soil plan. He doesn't submit it. He takes potshots at our plan. That opens up his credibility and I get to go through his plan.

THE HEARING OFFICER: I'm going to overrule the objection.

You opened the door.

BY MR. CASH:

Q. All right. Now, your original plan had $137,492,000, soil-only component, didn't it?

A. Well, as you're aware -- I don't know. As you're aware, Mr. Wayne Prejean, the PE at my office, prepared the remediation plans.

Q. And you coauthored that with him. Certainly you reviewed the plan before it went out, didn't you?

A. I coauthored, I coauthored the -- correct, I signed off on the plan.

Q. Yeah.

A. But as you're well aware, and as I testified to in depositional testimony, Mr. Prejean was responsible for the remediation portion of that document. I did not, I did not write any of that.

Q. What company was that plan submitted by?
A. ICON.
Q. Okay. And when you testified about your qualification, you testified about the work that ICON does; right?
A. That's correct.
Q. Who is the principal of ICON?
A. I am.
Q. All right. And in ICON's plan, the original soil component was 137,492, wasn't it?
A. Mr. Cash, Wayne Prejean is the person, appropriate person at ICON to answer your question specific to remediation costs.
Q. And, in fact, there was a mathematical error that was discovered, and the plan was revised down to $63 million; isn't that correct?
A. That's my understanding, yes.
Q. All right. And you're removing and replacing under your plan about 330,000 cubic feet -- cubic yards of this wetland?
A. Mr. Prejean can answer that.
Q. All right.
A. I can make him available if you'd like to question him.
MR. CASH: I'll tell you what, if that's an

offer Mr. Jones is willing to do, I'm happy to do so.

But I think you might want to check with him before you offer it.

BY MR. CASH:

Q. All right. You-all had the opportunity to submit a plan here; right? That's available to you-all?

A. I presume that's correct.

Q. All right. And you've already finished your plan; right?

A. Which plan?

Q. The plan --

A. The feasible plan or --

Q. The plan that you-all have. The plan that was used in the report.

A. For the limited admission?

Q. The plan that was in your report.

A. We didn't submit a plan for limited admission.

Q. That wasn't my question.

You've already finished a plan that we've previously discussed that has the $65 million soil component.

A. Correct, for the litigation portion of the

case.

Q. Right. You make my point.

That's the plan you're going to put in front of a jury, not in front of the Panel of scientists; right?

A. Correct. Same as your experts have a different plan for the jury.

Q. You understand we presented our plan to be scrutinized by these people and you didn't. You understand that; correct?

A. Correct. And I'm here to comment on that plan.

Q. I understand that.

You would agree with me that, under Statewide Order 29-B, there's no parameter for salt in submerged wetland? We talked about that.

MR. JONES: Asked and answered.

MR. CASH: All right. I'll move on.

BY MR. CASH:

Q. As we sit here today, you would agree that the property is a submerged wetland, at least what you call a flotant marsh?

A. East of the road, yes, it is -- I consider it to be a submerged wetland today.

Q. Let's talk about this whole subsidence

argument you have.

Correct me if I'm wrong: You contend that the flotant marsh was created by subsidence, which you contend was caused by the oil and gas activity. Correct?

A. Impoundment and subsidence; it's both.

Q. Let's talk about the subsidence part.

Now, is there any reference to subsidence in 29-B that you can point me to?

A. Not that I'm aware of, no.

Q. All right. And one of the ways that you say this happened was that produced water would allow bacteria, microorganisms, that would eat some of the subsurface organic material, which would then basically take away a layer and cause the layers above it to sink.

Is that your -- that's one of your subsidence arguments?

A. Sulfate loading? Yes, it's a --

MR. JONES: On the record, objection, please. This subsidence is beyond the scope.

THE HEARING OFFICER: I think he mentioned subsidence in direct.

MR. JONES: No, he didn't.

THE HEARING OFFICER: Did I miss that?

MR. JONES: You missed that.
MR. CASH: If subsidence is beyond the scope of this hearing -- because he's talked about this whole flotant marsh, how it was created.

If they're saying that they're not asking this Panel to address subsidence, then I will move on.

But if they're asking the Panel to address subsidence, he's the one that pointed to the flotant marsh and said it was oil and gas related, and I get to test how it was oil and gas related and what he did to determine that.

MR. JONES: Of course we think that the right thing for the Panel to do is to clean up -- to order a cleanup of Hess' mess out there inside of this area in the flotant marsh. We didn't say the word "subsidence."

"Subsidence" is a scientific word that has certain meanings. That word did not come up. So you can't connect and wrap around the axle subsidence in what he testified about to earlier.

MR. CASH: He just testified that he believes subsidence is one of the things that caused

the flotant marsh that they want you to correct.

THE HEARING OFFICER: I agree. He brought the word "subsidence" up.

MR. JONES: Oh, no. He brought it up.

THE HEARING OFFICER: I think he brought it up first. But I can go back and look at the record.

MR. JONES: Well, we should do that.

THE HEARING OFFICER: Look, look --

MR. JONES: If we're going to be fair and consistent with the landowners and the oil and gas guys, we need to take a look and make sure that our rulings are right down the middle and they're fair.

THE HEARING OFFICER: I think I've been trying to do my best to be right down the middle.

I will say this: He has said and your position in this hearing is that oil and gas operations caused this thing to be an inundated wetland. That has been the position.

One of his --

MR. JONES: That's actually not the position.

That's actually not the position.

It is a combination of hydrological change, and it is the salt contamination which emanated from the oil and gas operation.

THE HEARING OFFICER: You have not taken the position in this hearing that E&P operations have caused this thing to be -- he said it's submerged today. He said the reason it's been submerged -- the way I understand what I've heard him say -- is it's as a result of the E&P operations.

MR. JONES: Well, first off, he hasn't said the whole thing is submerged. He said the area east of the tank battery, so --

THE HEARING OFFICER: The record is going to say whatever the record says.

MR. JONES: But it's important that I point out when you're not being consistent with what the testimony has been.

THE HEARING OFFICER: I'm doing my best to be consistent.

He has said E&P operations --

I'm going to overrule your objection and let him ask the question. Subsidence can be

in the question.
BY MR. CASH:
Q. All right. So let me go back.
One of the ways you say this happened was that the produced water would allow micro-bacteria that would eat some of the subsurface organic material, which would basically then take away that layer and cause the layers above it to sink. Correct?
A. That's correct.
Q. And in this case, you've done no analysis of the material to see if they contain any of these types of organisms. You haven't looked at the subsurface where these organisms would live to see if there are any of those organisms; correct?
A. That's correct, and nor do I need to.
Q. I didn't ask that. I asked if you did.
A. Well, I'm going to explain my answer.
MR. JONES: He can explain his answer. Of course he can.
THE HEARING OFFICER: He has answered the question. He can explain his answer.
MR. CASH: All right. That's fine.
MR. JONES: It's unfair not to allow him to explain.
BY MR. CASH:

Q. Go ahead.

A. I don't need to identify the species of micro that's responsible for eating the organic layers.

It's been well published by geological trade journals and the USGS that sulfate loading in wastewaters to a wetland, they kick in activation of sulfate-reducing bacteria, SRB. It's a food source that they utilize to allow them to degrade organics. And the organics can be either naturally-occurring peats, or organic materials, or it could be hydrocarbons that are anthropogenically produced in the environment.

Produced water contains sulfates. So what happens is the produced water is discharged to an area like a marsh. Under reducing conditions, your sulfate-reducing bacteria go to town. They start consuming.

I didn't look at the bacteria, but what I did look is at the presence of the sulfate in the groundwater. And what you see are low levels of sulfate, almost non-detect, in the shallow groundwater; whereas that second zone that I showed you on the profile, we're seeing what appear to be more normal levels of sulfate. So that's indicative of sulfate-reducing conditions that have occurred on this

site.

Q. And I understand your theory. But here's what I don't understand: You had the opportunity, the ability and the capacity to check and see if in fact those bacteria are present and if in fact that organic layer was missing. You could confirm what you just theoretically said.

Did you do -- listen to my question.

A. I am.

Q. Did you go determine if in fact those microorganisms were present or if the organic layer that they eat away was gone? Did you specifically confirm that?

A. I did not, and nor do I need to.

It's, this is a similar process in natural attenuation studies.

Never in a natural attenuation study, or very seldom do you go out and speciate the bacteria that are responsible for consuming the hydrocarbon. You look for indicators that suggest that the phenomena is occurring, the conditions are conducive for natural attenuation of contamination.

But never do you go out and typically identify the name of the microorganism that is responsible for the degradation of the waste.

Q. I don't need the name. I just need you to determine whether it was there. And you didn't do any test to determine if it was in fact there.

A. Actually I did. I looked at the conditions that confirm -- the conditions for sulfate-reducing bacteria consuming because of the lack of sulfate in the shallow groundwater.

Q. Did you take a boring that would show the absence of the organic material that was allegedly eaten away? Did you do that and analyze it?

A. I did not, and nor do I need to.

Q. All right. Next you think that the sodium in the produced water destroyed the clay layer. Correct?

A. That's correct.

Q. All right. Your theory is that, when the sodium comes in contact with the clay, it destroys the electrical balance and the clay is dispersed, the clay compacts, and so there's subsidence. Correct?

A. Correct.

Q. And you took over a hundred borings out there, didn't you?

A. Yes.

Q. On even one of those borings, did you do an analysis to see if the compaction you talked about happened? Did you compare it to any places where there

wasn't contamination? Did you compare the density of the clay to see if that compaction had in fact happened?

A. I did not.

Q. All right.

A. Because I wasn't trying to quantify the amount of subsidence on the property.

Q. But you-all are blaming us for the subsidence. This is one of your theories of how it happened. It's easily confirmed. You have over a hundred borings. All you've got to do is check one. And you didn't do it, did you?

A. And again, we did not, and we did not -- it was not the objective of a contamination assessment.

I mean, we're not, we're not using the lack of listed standards of a submerged wetland and land treatment, an option you're not even using, as a justification to not address salts.

Q. That's not my question.

You're going to blame us for subsidence and you're the expert that the plaintiffs have hired. You have a way to confirm whether one of your theories has happened by looking at one of the 106 borings you have got, and you don't even take the time to do the analysis on the boring?

A. Mr. Cash, I'm of the position that the salt needs to be addressed whether it's submerged or not. It's an artificial condition.

Q. All right. Fair enough.

Now, Mr. Jones asked a bunch of questions of Mr. Millner about all the constituents that weren't tested for, and I want to do something.

You went out to look for constituents. That's what the landowner hired you to do, go out and see if there was contamination; right?

A. That's correct.

Q. And I assume you were aware of 29-B when you went out there and you decided what borings to take and what to check for?

A. That's correct.

Q. You tried to be thorough?

A. Yes.

Q. Yeah?

A. Oh yes.

Q. All right. So you tried to test for whatever the suite of 29-B constituents that needed to be tested for were, didn't you?

A. And in all target areas; but I do feel we likely missed some areas.

Q. All right. Well, I appreciate that

admission.

But let's do this, let's go --

All right. Pull up those AOI slides and let's go through them, because it was implied that Mr. Millner back here didn't have -- that Mr. Millner out here didn't have all these different analyses. He just tested for one thing.

Well, in fact, when you went to AOI 1, you-all tested for oil and grease, ESP, SAR, EC, arsenic, true total barium, cadmium, chromium, lead, mercury, selenium, silver, zinc. You-all tested for all that. You-all had data.

You asked if he was a data guy. You-all produced data on that, didn't you?

A. Without going back and confirming all of the coc's, that appears to be consistent, unless we also ran a TPH, which we ran on most of the AOIs.

Q. And you-all took that one boring, 20-147; correct?

If it's easier to see behind you.

A. I think that's the CEI boring, if I'm not mistaken.

Q. So that wasn't even you-all's boring?

A. No, I don't think so.

Q. All right. Let's see what was found. Let's

go to the next one, the next slide please.

No, just wherever that was.

All right. And the only exceedance that was 29-B based on that sample were oil and grease and true total barium; correct?

A. As I understand it, yes.

Q. All right. Let's look at everything that was tested on AOI 2.

Again, all the things that the suite was run for -- oil and grease, ESP, SAR, EC, arsenic, true total barium, cadmium, chromium, lead, mercury, selenium, silver, zinc -- those were all tested for, all sent to the lab to give people like Mr. Millner data. Correct?

A. Again that's an another CEI boring, but that appears to be correct.

Q. And you tested them too? You-all got splits; right?

A. No. CEI did some independent testing on the property. I think those two borings were their independent testing.

Q. And who is CEI?

A. Coastal Environments.

Q. All right. And who is the principal of Coastal Environments?

A. Mr. Woody Gagliano.
Q. And who has hired them?
A. Pardon me?
Q. Landowners' experts?
A. Yes.
Q. They were on your team. You could share the data; right? They didn't keep it from you?
A. I mean, we're not a team.
MR. JONES: I would like to make an objection. Beyond the scope, since it's somebody else's plan. It's not even his plan.
THE HEARING OFFICER: Overruled.
Keep going.
BY MR. CASH:
Q. Thank you.
Would I find all this on the ICON tables, the tables you used and attached --
A. I think we did get their data.
Q. All right. So you got their data, he got their data; and the only exceedance at AOI 2: True total barium. Correct?
A. As I recall, yes.
Q. All right. Let's go to the next AOI.
AOI 3: Oil and grease, ESP, SAR, EC,

arsenic, true total barium, cadmium, chromium, lead, mercury, selenium, silver, zinc, parameters run for all those under 29-B.

Oil and grease only exceedance; correct?

A. As I recall, yes.

Q. All right. Let's go to AOI 4.

Oil and grease, ESP, SAR, EC, pH, arsenic, true total barium, cadmium, chromium, lead, mercury, selenium, silver, zinc. All tested against 29-B parameters, only exceedance: True total barium; correct?

A. And I think that was a CEI boring, if I'm not mistaken.

Q. All right. Whoever's boring it is, whoever of plaintiffs' experts did borings, it was data you had and you had available; correct?

A. Yes. I just don't want you to infer that that was some decision that I made on any of these.

Q. That's fine.

Next, AOI 5. You talked about: Oil and grease, ESP, SAR, EC, pH, arsenic, true total barium, cadmium, chromium, lead, mercury, selenium, silver, zinc. All those were run against 29-B; only exceedance, oil and grease. Correct?

A. That's correct.

Q. Let's go to 6.

Again, run against the 29-B standards: Oil and grease, ESP, SAR, EC, pH, arsenic, true total barium, cadmium, chromium, lead, mercury, selenium silver, zinc. All those were run. Again, only oil and grease. Correct?

A. Correct.

Q. Okay. Let's look at 7 and 8.

Oil and grease, ESP, SAR, EC, arsenic, true total barium, cadmium, chromium, lead, mercury, selenium, silver, zinc, radium-226, radium-228. The only positive, 226 and 228; correct?

A. That's correct.

Q. Let's go to finally AOI 8: Again all the same: Oil and grease, ESP, SAR, EC, arsenic, true total barium, cadmium, chromium, lead, mercury, selenium, silver, zinc, radium-226, radium-228.

Radium-226 and 228 are the exceedances; correct?

A. Correct.

And just to make it clear, that this is all just the soil samples; not any of the groundwater samples that we collected in those same AOIs.

Q. I understand. We're talking about soil here.

A. Right.

Q. And speaking of which, let's talk about AOI 5 that you brought up. You mentioned benzene.

On any of your soil borings anywhere on AOI 5 did you find a benzene hit in the soil?

Any of your borings on AOI 5, did you find a single benzene hit in the soil?

A. I don't recall. I would have to go back and look.

Q. If you're coming here to testify that AOI 5 is being recontaminated by groundwater because there's benzene, and you knew you were going to testify to the Panel, and the one question you hadn't figured -- we've done this a few times that I'm smart enough to ask you, did you have a benzene hit in the soil, and you don't remember?

A. I don't recall.

If you're not set up to test for benzene in soils with the proper equipment, it's likely that -- which would be either an Encore or a Terracore sampler would be required to collect the sample. You need the equipment to properly collect the sample, and I just don't recall -- we typically don't run into a whole lot of volatile constituents in an oilfield assessment of this type. Gas plants we do. So I don't know.

Q. Did you have the equipment?

A. That material is supplied -- it's like a laboratory container, so it's prepared by the lab. So you have to, you have to plan to collect volatile constituents in soil. You have got to know it's a potential coc.

Q. Let me ask you this: When did you come up with this benzene theory? Before you wrote your report or after you wrote your report?

A. It really wasn't until, until we saw the groundwater data that we figured out what was going on because --

Q. My question was: Before you wrote your report or after you wrote your report?

A. Before.

Q. So before you ever wrote your report, before you gave the expert report that you gave, you already had this benzene theory, and you didn't test the soil for benzene at AOI 5 where you say it was recontaminated so you could confirm if in fact it was recontaminated?

A. I think I've confirmed that it was recontaminated.

Q. With benzene, which is what you say is in the groundwater?

A. It's actually -- benzene is an indicator of

condensate, and TPH-D was elevated as well.

Q. Did you fractionate to determine if there was benzene in the soil? That's a pretty simple question.

A. I did not.

Q. All right.

A. You don't fractionate for benzene.

Q. Okay. So there's a way to test for it in soil I assume. Right?

A. You can -- again, that's what I was saying, you've got to be prepared to collect samples.

Q. And you just weren't prepared to collect the samples?

A. I just don't recall.

Q. Okay.

Aerial of '73.

I think we all have the '73 picture memorized, but just in case we don't.

MR. JONES: What's that?

MR. CASH: I think it's the '73 photograph. I think it's kind of reddish.

MR. JONES: I'm kidding.

BY MR. CASH:

Q. Okay. There we go.

Since you have pointer over there --

Did we ever figure out the pointer?

MR. JONES: Oh, I may have it.
BY MR. CASH:
Q. Wait. I may have one.
I do. Okay.
It's my understanding that all this by 1973 was this flotant marsh we're talking about. Correct?
A. No, I don't think it's flotant marsh. I think it's impounded.
So you can see, you know -- I mean, it's probably in a developmental stage of a flotant, but I don't think it's there yet.
Q. Okay. So as of 1973, was this area conducive to the growth of cypress trees? In '73?
A. No. I think, in my opinion, produced water has been discharged into this area. If I recall, I think there were issues in 1965 --
Q. Okay.
A. -- that there was -- I saw some correspondence to Hess that required them to construct secondary containment due to the releases of oil and produced water, which is why you see these levee features here and here. I think they were constructed in response to that.
So there's been some alteration of conditions that were engineered in response to requests from the

agency.

Q. Now, you would agree with me, the impoundment wouldn't kill mature cypress trees; right?

A. Mature cypress trees, that's correct.

Q. What your position was, over objection, was that they can't regerminate -- that the saplings, seedlings can't regerminate in an impounded area?

A. You can't have prolonged periods where the seedlings are under water.

Q. And so the mature cypress trees, if they weren't killed by impoundment, it's your position it would have been the salt that killed them, right --

A. That's correct.

Q. -- that would be in the ground?

And we've all seen pictures of these ghost forests. Right?

A. Yes.

Q. Now, out of this flotant marsh, there aren't dead trees standing. There aren't husks. There aren't any of those ghost forests, are there?

A. I think there's about maybe four or five. That's all I saw.

Q. Four or five total trees?

A. Yes.

Q. Where are the rest?

A. I have no idea.
Q. Now, there was logging by the landowner back in this area, back before oil and gas --
MR. JONES: In 1912?
BY MR. CASH:
Q. Whenever. There had been logging, hadn't there?
A. There has, yes.
Q. All right. And have you checked with anybody, any of the records or anything to see if there was any logging of cypress trees in the 40s, 50s or 60s on that property?
A. No. I was just looking at historical aerial photography. And, as a matter of fact, I can see --
See these little linear features here? That's shadows that likely represent some remnant cypress right in this area, right here (indicating).
So there are some standing on this date, but again, it's not fully inundated.
Q. So as of '73, you don't think this was being used to log cypress trees; correct?
A. I do not, no.
Q. And after this period, certainly cypress --
A. They continued to disappear at some point.
Q. Cypress trees, the use of cypress trees or

the growth of cypress trees, or silviculture in this area wasn't a realistic possibility in 1973; correct?

A. Not with all that produced water, no.

Q. Okay. Now, one of the things that you looked at -- in fact you-all put it up there and it was in red. And I'm not going to make Connie find it -- but it was your definition of contamination that makes it unsuitable for its intended purpose. Correct?

A. Correct.

Q. Now, have you talked to the owners of this property, Raceland Raw Sugar, about their intended purpose for this property?

A. Not the owners, no.

Q. And they are the ones that own the property, and it's theirs to do with as they please; correct?

A. Correct.

Q. All right. Are you aware they bought this property in 1998, 25 years after this picture was taken?

A. I'm aware of that, yes.

Q. So they probably didn't intend to do cypress forests in the flotant marsh that had existed for almost two and a half decades; right?

A. I can't speak for what their intent is. I can speak for what historical use and highest and best

use of the property.

Q. Okay. But it doesn't say "historical use." It doesn't say "highest and best use." What it says and what you put up there was "intended use." Right?

A. Correct.

Q. And the landowner knows how they intend to use their land; right?

A. Yes.

Q. And as of the day they bought it in '98, it was already a flotant marsh and it was not suitable -- it was not something that was made for logging at that time; correct?

A. Well, it was, it was destroyed or on its way to being destroyed by 1973.

Q. And you call it "destroyed." But wetlands and marshes are a part of Louisiana, are they not?

A. They are; but there is a huge difference between a flotant marsh and a cypress wetland.

Q. And is it your testimony to this Panel that a flotant marsh is an undesirable thing to have?

A. I can speak from my point of view.

I would much rather have cypress forest than flotant. You can barely get around flotant.

Q. I asked you: Is it an undesirable thing for a landowner to have, to impound and flood?

MR. JONES: Objection. What is that question?

It requires -- is it an undesirable thing --

Well, no --

THE HEARING OFFICER: I'm going to overrule the objection.

THE WITNESS: In my opinion, I can speak, you know, if I were a landowner, I wouldn't want flotant. I would want my cypress forest back.

BY MR. CASH:

Q. Good point. And Raceland Raw Sugar dumps hundreds of millions of gallons of saltwater on their property --

MR. JONES: Objection. Beyond the scope. No foundation.

Mr. Balhoff --

MR. CASH: We testified earlier about this.

MR. JONES: This is ridiculous. This is truly -- he objected to something called beyond the scope when I was taking the cross examination of Dr. Millner and said your ruling could not have been more clear: It's beyond the scope.

I didn't talk about land ownership. I didn't talk about spills. He's got no foundation that there has been a release here.

He's called four experts; not one has testified about that, and nor did this witness say a thing about any discharges of this landowner; in addition to the fact it's not even on this property.

So can we please have a consistent ruling on this?

THE HEARING OFFICER: Wait a minute. Wait a minute. Wait a minute.

He testified about intended use.

MR. JONES: We're not talking about intended use now.

THE HEARING OFFICER: The question is about the current owner of Raceland and its intended, you know, the intended use.

It's -- I'm going to allow the question.

BY MR. CASH:

Q. The impoundment -- you've already testified the impoundment of the water won't allow cypress trees to grow.

A. No, I said that the condition of the

impoundment and subsidence has altered the hydrology.

The presence of the salts are what will kill mature cypress. And what I said is that, in restoration work, that you cannot rejuvenate a cypress seedling under impound conditions.

Q. All right. And if I am trying to cultivate a cypress forest, I can't do it in an impounded condition?

A. That's correct.

Q. Are you aware of the condition that exists on the Raceland Raw Sugar property immediately to the west of this, immediately to the west of this?

MR. JONES: Objection. It's not even anywhere immediately to the west.

Make him lay a foundation, please, if you're going to introduce things off-topic as to where this property is he's talking about.

MR. CASH: It's Raceland's property.

MR. JONES: It's outside the 220 acres.

THE HEARING OFFICER: I've seen the maps. But look, I'm just a hearing officer here, but I'm going to overrule your objection and allow the question.

MR. CASH: I'm going to make it easier for everybody. I'm just going to withdraw the

question. I'm going to ask a different one.
THE HEARING OFFICER: Okay.
MR. CASH: In fact, hold on. Give me a second.
Tom, can I have about two minutes, just to make sure that I'm done?
MR. JONES: Can we do seven?
MR. CASH: All right. Can we have seven minutes to make sure I'm done?
MR. JONES: Because I really want him to be done.
THE HEARING OFFICER: Be back at 11:15.
(Brief recess taken.)
THE HEARING OFFICER: Okay. So we're back on the record, Mr. Cash.
MR. CASH: I appreciate the seven minutes. I'm sure it saved you countless more minutes.
I pass the witness.
THE HEARING OFFICER: Mr. Jones.

REDIRECT EXAMINATION

BY MR. JONES:

Q. Just a couple of questions.
You were asked about the plan.
Explain to the Panel why you didn't submit a plan.

Or let me, let me ask that a little bit differently.

Explain to the Panel why you didn't submit the plan that was, your report that was used in connection with the litigation?

A. Because they only admitted -- it's a limited admission of liability, or I forget the technical word you-all were arguing about.

MR. JONES: Don't say liability. Say responsibility.

MR. CASH: Regulatory responsibility.

BY MR. JONES:

Q. Yes, regulatory responsibility.

A. Yeah. They admitted regulatory responsibility only for the soil.

And in my opinion, it's just not scientifically or technically possible to address contamination on this property by only dealing with soil. Contamination doesn't just -- it's a result of an action.

Q. Okay. All right. Now, you were asked a couple of questions about the sampling that you all, that you and CEI did. Do you remember those questions of the various sites?

A. Yes.

Q. And I notice there were just one or two right there. We can go through them all again. But for the most part between AOI 1 and AOI 8, there was one or two sample sites there. Correct?

A. You're talking about the actual samples?

Q. Yeah.

A. Per AOI?

Q. Yeah.

A. I think they were only showing the ones that exceeded. I'm not sure if there were more -- there were likely a whole lot more borings.

Q. Uh-huh. Now, are you aware that as soon as Hess delivered its plan on July 14th, this department sent a letter and said, You haven't defined or delineated the horizontal extent of the contamination.

A. I think I've seen that.

Q. Let me show you this letter, July 18. You've seen it.

It was the department that wrote and said, Where is the analysis on all of the metal constituents in your report, Hess? Correct?

Take your time and take a look at it.

A. Yes, I see that.

Q. Okay. What they were asking was Hess to please comply with the July 14th plan that it

submitted to this particular Panel. Right? It asked them to comply with Chapter 6.

A. Yes.

Q. Now, before the department did that in July of 2015, how long had Mr. Millner and all the other experts that Hess has got on the payroll here, how long had they been out crawling around on this property?

A. I think a couple of years.

Q. I'm sorry?

A. A couple of years.

Q. A couple of years.

And by the time that they had submitted their plan on July 14th, 2015, it was not altogether apparent that they had complied with Chapter 6 and delineated the horizontal and vertical extent of the contamination; is that right?

A. That's correct.

Q. All right. Now, he asked you a question about Raceland.

You've looked at all the data: Theirs, ours, everybody else's on this case. Is there -- Do you have an opinion as to whether or not the waste that has been identified in that data has come from the oil and gas operations on this property?

A. Yes, oil and gas operations has caused all of

them.

Q. Is there any evidence anywhere in this case -- two years, millions and millions of dollars spent by their side, the landowners' side, getting all that data together -- is there one iota of evidence that there is a single sample result that suggests that the devastation seen in the 1973 picture and the loss of the cypress wetland and all of the other soil contamination is the result of anything other than oil and gas waste?

A. In my opinion it's -- oil and gas is the cause of it all.

MR. JONES: That's it.

THE HEARING OFFICER: Anything else you want? Okay. Mr. Campbell?

BY MR. CAMPBELL:

Q. Mr. Millner, would you mind giving an overview regarding your position on the recontamination of AOI 5, which is where the pit was closed in the early 90s? Just go over that again, please.

A. Yes.

Again, I looked at historical evidence to verify that originally the pit contents had been removed. And we saw no evidence of residue to indicate that it was a poor closure job, that there was material

left in place. So that was a key part of me trying to narrow down what's going on here because we've got exceedances today and we didn't historically, or that was remediated historically.

The groundwater plumes again contained benzene and TPH-G, probably dissolved condensate. And the top of the aquifer becomes really shallow and an elongated east-west ridge that coincides with the location of the production pit at AOI Number 5. So the top of the aquifer is very shallow and it's contaminated.

So in my opinion, when they originally closed the pit -- and as I understand it, they collected closure samples that indicated the oil and grease met 29-B at the time. Today we have what appears to be four feet of clay backfill in the top of the pit that's contaminated, that exceeds the oil and grease standard.

I mean, maybe there's -- it's possible there could have been a more recent pipeline release or something of the sort, but I have no evidence of that.

So right now, looking at all of the data before me, knowing what we encounter, you know, numerous times in assessing benzene, it seems that the only explanation for the exceedances we see is a result of groundwater fluctuations within the pit cap, the

backfill that they put in the pit, the actual groundwater rising and falling within those materials and volatilization of the benzene into the clay, into the unsaturated portions of the cap.

We see this phenomena in station tank contamination quite a bit. It's a mass transfer of petroleum hydrocarbons from the dissolved aqueous state into vapor, and then it adheres to the soil, which results in soil contamination.

MR. CAMPBELL: Thank you.

THE HEARING OFFICER: Ms. Love?

MS. LOVE: No questions at this time.

THE HEARING OFFICER: Mr. Pennington?

BY MR. PENNINGTON:

Q. Yeah, just a quick one.

On those AOIs that you said you didn't think they were submerged wetlands, how did you come to that -- how did you come to that conclusion that they don't meet the definition of a submerged wetland in Chapter 3?

A. Before the impoundment?

Q. No, I'm talking about today.

A. Today?

Q. How did you come to that conclusion, I forget which, 3, 4, 5, whichever ones you said were not --

that you said you didn't believe were submerged wetland, how did you come to say that those were not submerged? Didn't meet the definition of a submerged wetland in Chapter 3?

A. Based on observations of hydrology, and then there's no flotant on the AOIs that are located west of the access road.

I mean, you're a biologist. You identify wetlands. That's in your background.

I would urge you to go to the site and take a look at it. You can readily see, you can walk around those AOIs adjacent to the north-south road. Whereas east of the road, it is submerged, and you can see the constant elevation of the vegetation.

It wasn't a result of long term monitoring of hydrology.

Q. What was -- can you tell us what type of vegetation was at those sites, at the ones that you were talking about?

A. I'm not a biologist, Steve.

Q. Well, is it consistent, would it be consistent or inconsistent with what would be grown on a submerged wetland?

A. There were cattails growing in the pit at AOI 5. Other than that, it was -- it was not a

flotant-type vegetation. I can't give you the name, but you can see --

Q. Okay. So let me ask you this: Would it be -- you said you could walk out to it.

A. Right.

Q. But you're not saying it was never any kind of water -- did it get inundated at times?

A. Oh, yeah. No doubt. Oh, there's no doubt, it's a wetland that becomes inundated.

But on the date of my visit, you weren't walking on flotant. You were walking on dry land with puddles of water to those AOIs.

Q. Okay. So you're saying it is -- it does get inundated with water?

A. It's right next to a canal. Absolutely.

MR. PENNINGTON: Okay. Okay.

That's all I've got.

THE HEARING OFFICER: Okay, Mr. Miller. Thank you very much.

MR. JONES: Dr. Rogers.

THE HEARING OFFICER: Okay. Dr. Rogers.

MR. JONES: He will by our final witness.

WHEREUPON, WILLIAM JAMES ROGERS, PH.D., having been duly sworn, testified as follows:

THE HEARING OFFICER: Okay, Mr. Jones.

DIRECT EXAMINATION

BY MR. JONES:

Q. Sir, would you provide your full name, please.

A. It's William James Rogers.

Q. Okay. And Mr. Rogers, would you tell us where you're from?

A. I'm from Amarillo, Texas. Specifically I teach at West Texas A&M in Canyon, Texas, which is just south of Amarillo.

Q. All right. And what's your particular profession or discipline related to the matters in this case?

A. Well, I'm the Director of the Environmental Science Program. I'm also the Director of Environmental Science and Research for the program.

I have been involved -- primarily my responsibility is environmental risk assessment.

Q. Okay. And did you go to school to become an environmental risk assessor?

A. Well, there -- as you know, it was kind of an emerging field. There was no degrees in risk assessment, just like there were no degrees in environmental toxicology at that point in time when I

went to school.

I did, I have a bachelor's from West Texas University, which is now West Texas A&M University, received a master's in biology there as well.

I went and worked with the Department of Interior and various private entities, including Ducks Unlimited, for a year or so. And then I went back in 1997, completed my Ph.D. And it was in environmental risk assessment through the Department of Wildlife and Fisheries.

So my Ph.D. is from Texas A&M in Wildlife and Fisheries Sciences, with an emphasis on risk assessment and environmental toxicology.

Q. Did you do a dissertation at Texas A&M?

A. Yes, I did a dissertation, and it was on a, developing a model for risk assessment, ecological risk assessment, and also spacial habitat suitability. We were linking doing risk assessments and then overlaying that using the Fish and Wildlife Services HEB habitat ranking system and overlaying that, so someone could look at amortized losses and benefits of both remediation and impact over time.

Q. All right. Let's talk a little bit about your work experience and work our way backwards.

What are you currently -- how are you

currently employed and what are you up to?

A. Well, currently, again, I'm a full professor of environmental science at the university, university. Basically my field of expertise based on the university for public -- we do public assistance and public service -- is the field of environmental risk assessment, toxicology, environmental science.

We also help facilities with -- I'm currently working with an organization trying to remediate nitrate in the groundwater. Water losses, that's part of our public service. Universities, we are ranked on teaching, research and our public service.

Q. Okay. In your -- how long have you been in this practice, environmental risk assessment as such, in whatever form it's come in over the course of that time?

A. I have been involved in environmental risk assessment since its inception.

Many of you -- I know the biologists on our Panel remember Kesterson Reservoir in California. That was an issue on irrigation return flows and basically salt concentrations accumulating in a Bureau of Reclamation interior wetland area.

I had been working with the Bureau on the Tularosa Basin in White Sands on several projects to

reuse saltwater, and also using saltwater and other materials to basically produce grasslands on the White Sands Training Range. They were trying to figure out a way to reduce heat waves so they could take photographs of missile shots and other performance shots. I was working on that.

And then when Kesterson came about, there were -- this was in the, oh gosh, probably the mid/early 80s. There was a report by the "Sacramento Bee" that stated that Kesterson was being polluted by salts, by runoff from the irrigation projects that were Bureau of Interior sponsored.

So what happened is the Secretary of the Interior, looking for someone that was somewhat qualified in the field -- there was nobody working much in that field at that time -- I got nominated as the regional coordinator for all the risk assessments.

So my job was to assess all the irrigation projects under Interior's overview and funding in the entire Western United States and to identify any environmental impact, both human health or ecological. And we you used the Academy of Science's new Red Book, I believe it was, Protocol on Risk Assessment. And I conducted all those studies with direct oversight from the National Academy of Science. That's where we

developed a lot of the remediation site characterization technologies.

It was a tri-party team. It was U.S. Fish and Wildlife Service, USGS, and the Bureau of Reclamation. And we worked together, and I guess I could say that was a pivotal turning point in my career. I always thought I would be sitting on a pristine stream somewhere and sampling and fly-fishing on the side, and I didn't realize that my future was going to be in high tech trash and polluted sites. And so that was kind of a pivotal change.

Q. Let me ask you: Did you ever take your education and all your work experience working on the -- working for the Secretary of the Interior, have you ever worked for the World Bank?

A. Yes, I worked with them, and then I did numerous studies, working at things like environmental planning for the high level repositories, two of them, looking at waste management at those sites.

I am also a Certified Hazardous Materials Manager at the master's level. That is a test-qualified position. You have to pass a certification exam, which is both risk assessment, toxicology, regulations. It's a fairly difficult exam. I worked with them.

Then later on, in about '95, by invitation, I was working at Azerbaijan -- probably one of the most polluted countries in the world, basically from oil production.

I made a visit there as a public service visit, and I made a presentation on ecological risk assessment and risk assessment. And then when the World Bank funded what they called a natural environmental -- a Natural Environmental Action Plan in which they identified all of the environmental issues in the country. And the Azeri government asked for me to be involved in that, and I started working on that project. And I worked on that project for about twelve years, assisting them in the remediation of probably one of the most contaminated sites in the world.

We oversaw the risk -- and by the way the Caspian, this sits on the Caspian Sea. This particular project -- Sumqayit was the town I worked in -- was listed by the Caspian Sea Republics and partners as the greatest risk to the Caspian Sea ecosystem in the system.

And so we basically did an oilfield demonstration cleanup. I managed one of the largest cleanups probably in the whole world. It was 200 acres. We also managed one of the largest mercury

cleanups. We recovered a thousand metric tons of mercury from the soil and then reused that product.

And then we also designed and built the country's first hazardous waste landfill. And I also helped them write their regulations and protocols for that activity.

After that the World Bank retained me as an environmental consultant to them on numerous projects.

I worked -- for example, Dr. Millner and I have somewhat similar experience -- I do training, hazmat training, emergency response training. I also work with local entities on developing what they call their protective action distances, PADs. In case they have a release, we support them. I also support the World Bank on that.

For example, when they had the cyanide spill in the Tisza, which runs into the Danube, I was actually designing the sampling and the personal protection equipment from that, while I was sitting at the university. I didn't have time to get there. We were online working on that.

I also supported the World Bank in evaluating all the environmental remediation projects in the former Soviet Union, worked on that project.

I also worked on projects within Rumania.

That would be the Tisza cyanide spill.

I worked with them in Argentina, and now we're working on a small project in Colombia.

Q. Let's bring it back to the United States for just a second.

Have you worked for the United States federal government at all?

A. Yes, I've worked extensively with the Department of Energy, the Department of Defense. I worked with them on doing remediation on numerous sites.

I worked at -- in my career we did, I did ecological risk assessment, risk assessment and project management for the high level Yucca Mountain project that was under the Department of Energy.

I worked with, let's see, Rocky Flats in Colorado.

I worked on the East Fork Poplar Creek, and I did the ecological risk assessment there and supported the human health risk assessment there. I was lead on the ecological risk assessment. That was under the EPA region.

And then based upon recommendations from that EPA region, they recommended that I assist the Savannah River DOD site, and I -- in effect I went there and I

helped them write their ecological risk assessment guidelines, because there were no guidelines at that point in time.

On both of those projects, I worked with Glenn Suttor. He was basically working at the Oak Ridge National Labs. He authored a book on ecological risk and we're still good friends.

Worked with the Department of Defense on numerous sites. Later on I worked at Pantex, where I was the restoration manager for the 144 -- what you would call AOIs -- they were shmoos and IHS's and all of that. I was responsible for that $144 million program.

I was then offered a teaching position at West Texas A&M. And I also wanted to, at that point in time, I focused then on the risk assessment. I did the ecological risk assessment on all 144 sites of the nuclear weapons plant, as well as I worked on the, or co-authored the Human Health Risk Assessment.

I also did a lot of secret risk assessments. I did the tritium release, Cell One Tritium Release. I did the human health risk assessment on the Cesium 137. I also did the depleted uranium dispersion and risk assessment for the Fireside Five. I did a lot of those types of studies.

Q. Let's move to your work for various state agencies across the country in performing ecological risk assessments.

A. For state agencies, I'm currently -- I have been involved with risk assessment. Ecological risk is my specialty. With all the receptors, I find it the most challenging -- not that human health risk assessment isn't challenging. But when you have literally thousands and thousands of receptors, it's more challenging.

I've been on contract with the Texas Commission on Environmental Quality for twelve years off and on.

In those years when they didn't have funding, I basically funded the project myself. But we have been developing an ecological risk model which has now been written into the regulations.

And as of January 1, our model -- we also assisted them in rewriting their ecological risk assessment implementing guidelines. We assisted them in that.

And then I developed the models. I have been working on that for twelve years, to develop a web-based interactive risk assessment model that is for both regulators and users. And that will be available,

will be online on January 1, if everything goes well. That's been a million-dollar effort, funded in part by DOD and also by the state of Texas. And then they funded my lab and my team to maintain that for as long as they use them. So that's a good way to keep a lot of graduate students employed.

Q. Okay. Let me ask you about your certifications.

Have you been certified in any particular areas?

A. Yes. I'm certified, as I stated before, Hazardous Materials Manager. I'm certified in Instreamflow, certified in Fish and Wildlife Service, HEP.

THE COURT REPORTER: Slow down, please.

THE WITNESS: Sorry. okay.

Certified in Fish and Wildlife Service, and the Bureau of Reclamation as well in Instreamflow methodology, evaluating stream flows and surface hydrology.

I'm certified in Habitat Evaluation procedures, Fish and Wildlife Service procedures.

And I think that's most everything.

BY MR. JONES:

Q. Have you published any literature in your profession?

A. I have numerous publications in technical reports.

I publish in the -- numerous articles in environmental toxicology, toxicology risk assessment. I've spent quite a bit of my time working with Dr. John Bickham. We were looking at not only -- you know, we have chronic effects and acute effects; but we have transgenerational effects, what happens to the genetic cultures and what goes on. I published in that area, and published on numerous studies on, for example, atrazine affects and other contaminant effects.

I also direct a Toxicological Environmental Chamber. We do research there and I'm responsible for that work.

Q. Tell us about your work history with regard to plant restoration and cypress trees.

A. I've worked -- again, when I, when I first started my study, again working in the mid 80s with the Secretary of the Interior, I had already been working -- one of the issues, Bureau of Reclamations' main charter is reclaiming the Southwest, and their main charter is irrigation.

If you come this direction, the Corps of

Engineers, if it's mostly flood control, then it would be a corps-dominated project, with a little bit of irrigation. If it's predominantly irrigation, then it becomes a Bureau of Reclamation project.

I worked with them. And one of the issues we had there is evaluating the irrigation water that we have; and then also looking at the impact of the water development projects -- whether we're building dams, building canals, irrigation -- looking at the effects of irrigation effluents.

That's when my career focused, with the Secretary of Interior's task force, when I took on that role, I became very focused in the environmental toxicology, in the role, especially in the effects of salts on various plans. I worked on that. I had to review the impacts of Interior projects on all the native flora and fauna, including the trees.

We have worked on cypress trees in the Texas Colorado River. There was proposed dam there, so we actually mapped and looked at the trees there. We did an environmental assessment on that project. We mapped the vegetation in that area, looked at the potential effects and then also the mitigation.

I did a similar study on the Sabine River, the Pedernales.

And then just recently we prepared a habitat suitability indices for a Guadalupe map turtle. And they are very dependent in high-flow conditions on both bank willows and cypress trees.

The bank willows have advantageous branches which provide trichopterans, which basically they feed on.

THE COURT REPORTER: Tri what?

THE WITNESS: Trichopterans. I'll get you the spelling on that later.

It's very interesting. The wonder of it, it's an endangered species -- what happens during flood events --

BY MR. JONES:

Q. Doctor, you'd better slow down a little bit. She's going to get very angry.

A. Yep. All right.

THE COURT REPORTER: And speak English.

THE WITNESS: All right.

A. But the willows, the advantageous roots float up and down on the high water, which provides a food source. But then you have to worry about the current.

And the cypress knees and the cypress trees along the Guadalupe provide basically any water there is where the turtles can actual occupy, so they are not

all flushed down. And so we're getting ready to publish that research in that paper on cypress.

So I worked -- there are other projects where I've worked on cypress trees.

I look at the big picture: All plants. And we focus on the specific species when we get to that point in the risk assessment.

BY MR. JONES:

Q. Have you been qualified in state and federal courts around the United States of America as an expert?

A. Yes, I have been qualified as an expert in both human health and environmental risk assessment, environmental toxicology, and those areas.

MR. JONES: All right. I would like to tender Dr. Rogers as an expert in ecological risk assessments.

THE HEARING OFFICER: Any voir dire?

MR. LAPEZE: I do have a couple of questions for Dr. Rogers, Mr. Balhoff.

THE HEARING OFFICER: Let me just understand. Environmental risk assessment?

MR. JONES: No, ecological risk assessment.

THE HEARING OFFICER: Ecological risk assessment.

Okay. Go ahead.

MR. LAPEZE: The source of my questions relate to a comment that Mr. Jones made, I'm sorry.

And I think he referenced Dr. Rogers may be speaking to the cypress trees on this property.

BY MR. LAPEZE:

Q. And I'll just ask you the question, Dr. Rogers.

As I was writing down the long list of things that you were saying --

MR. LAPEZE: Let me start maybe by saying we've got no objection to him as tendered -- but maybe I should address this now before having to interrupt his testimony later with respect to cypress trees.

VOIR DIRE EXAMINATION

BY MR. LAPEZE:

Q. You said that you worked on plant restoration projects and studied the effects of salt on various plants.

Has any of your work relating to the plant restoration and the effect of salts on various plants related to cypress trees in particular?

A. That work has been published in environmental assessments which are not, you know, peer-reviewed documents; but they're in those assessment reports which have been accepted by the Fish and Wildlife Service and by the other agencies.

Q. I understand there's lots of literature out there on the effects of cypress trees with salt. I'm talking about you, in your experience.

Have you ever worked on a plant restoration project that dealt with the effects of salt on cypress trees?

A. Yes, as part of those studies.

When we look at -- for example, when you build a dam, my charge is to look at the effects and what effect that would have on the existing riparian vegetation. So I actually would have to go out and quantify the numbers of cypress trees and other trees that were going to be inundated and obviously lost. In many cases they are left for fishing habitat; many times they are cleared.

But then my charge would then be to -- most of my work was on mitigating those losses, because our goal is no net loss of habitat.

So then what I would have to do is write a detailed report, go out and map the existing riparian

habitats, and look at other habitats, and make recommendations as to how we could mitigate those losses and restore that lost habitat. And I would base that on HSI and HEP and work on those projects.

Now, did I ever develop those? I wrote the plans on those.

Did I do the actual development of the cypress marsh? No.

Have I developed wetlands before? Yes.

As a matter of fact, I was one of the first people that did a wetland mitigation bank for a city of Provo, so I've been involved in wetlands, but I haven't actually developed one just for cypress.

Q. And I appreciate your answer, but I just want to make sure that the Panel is fully aware of what you can and cannot talk about.

The effect of salt on cypress trees is one of the issues obviously that has been addressed here today.

Have you yourself done any studies regarding the effect of salt on cypress trees?

A. I have not done a specific study on salts on cypress trees. I've done numerous studies on the effects of salts on plants.

As a matter of fact, I was retained by the

Texas Department of Transportation to rewrite, help them rewrite their vegetation establishment manual, and we actually developed a software program called Vegdat, to help them better --

THE COURT REPORTER: Veg what?

THE WITNESS: Vegdat, V-E-G-D-A-T.

-- to assist the Department of Transportation and their contractors in reestablishing plant growth on sodic soils and alkaline soils.

Now, did I publish specifically on cypress trees? No.

But I have a good understanding of the effect of salt on plants and trees in general, and I've not done a specific reestablishment of cypress. I have written plans on what they need to do that and the conditions in soil that would support reestablishment, and the hydrology as well for those trees.

BY MR. LAPEZE:

Q. You talked a lot about your work with sampling, design remediation plans. And again I just want to make sure that we know what you're going to talk about today.

You didn't develop any site remediation plan for the Raceland property in this matter, did you?

A. No, I did not.

Q. That was ICON; correct?

A. Yes.

Q. And you didn't have any input with ICON regarding the sampling locations on the Raceland site; correct?

MR. JONES: Can I make an objection?

Is this still going towards the tender? I mean, if he's doing it -- I mean, it doesn't sound like this is tender cross examination to me.

MR. LAPEZE: It's not, but, Tom, what I'm trying to do is --

MR. JONES: Can I not be interrupted for a second?

Can I please get on with my direct examination if we're beyond the tender?

THE HEARING OFFICER: Make your objection.

MR. JONES: I made my objection.

THE HEARING OFFICER: It sounds to me like you're willing to accept him in the area of tender?

MR. LAPEZE: I am.

THE HEARING OFFICER: And I agree, that goes more to cross examination.

Let me just ask you: The work that you did with cypress trees in the Colorado River -- he specifically asked you about salt, but what kind of work have you done in connection with cypress trees?

THE WITNESS: Well, the Colorado River --

THE HEARING OFFICER: And any other work.

THE WITNESS: Yes, yes. The type of work.

What I would do there is that, on all three of those sites -- on the Guadalupe, for example, that was based on endangered species and the integral part of the cypress tree and describing how the cypress was important to the ecosystem, as well as other trees in the hydrology.

On the Colorado River, the Pedernales and all those, those were all projects in which a dam was going to be constructed and land was going to be converted from basically riparian, in many areas cypress, cypress riparian zones.

So I did the assessment, one, if they are going to be inundated and destroyed.

Then my work there was evaluating mitigation sites and what type of soils and what kind of hydraulic conditions we would have to have to restore -- it was going to be a long, long term process -- what it would take to restore and mitigate those losses. And that was basically the pecan-cypress complex that we had in that particular area. So I spent quite a bit of time on that working with Fish and Wildlife Service and our other entities on coming up with restoration plans.

Bear in mind that once these are done, the actual work actually may go to contractors.

So was I out there looking at those? The only thing I would to is later on I would come back and measure the success of that project. But by that time I had moved on. Those projects take ten to fifteen years to develop.

THE HEARING OFFICER: But the work with cypress trees dealt with the whole issue of inundation?

THE WITNESS: Inundation and salt and the levels, because, again, what you're using --

a lot of those areas, like Kesterson, you don't use the good water. You use the water after it's been used in irrigation systems. Because as that water goes out into the plains and comes back to the riparian zone that's -- is that possible? And so that's where I worked on both the salinity and the hydrology.

THE HEARING OFFICER: So he's going to be accepted as tendered.

Go ahead, Mr. Jones.

MR. JONES: Thank you.

BY MR. JONES:

Q. Dr. Rogers, what were you asked to do in this particular matter?

A. Well, at first I was asked to look at the site, the site conditions; and look and see if the oil operations and activities had had any impact on both human health and on the eco system.

The previous questions: One of the things that we look at when we do a risk assessment, we are required to look at the ARARS, A-R-A-R-S, applicable, relevant and appropriate requirements.

And so when we look at risk cleanup, I would look at federal, state, local standards, including

29-B, RECAP, those levels, and see if there are any exceedances, because any remediation plan has to meet all of the applicable requirements.

So I looked at the site. We did an ecological -- we did kind of a, much like Dr. Millner, we looked at RECAP standard, 29-B. We looked at exceedances there, put that in the report. Then I did an eco tier 3 ecological risk assessment. We conducted that to EPA protocol.

We don't have RECAP standards -- in RECAP, we don't have ecological tables. They just defer to the EPA. Even though we are in Region 6, Region 6 defers to Region 5 for guidance.

And so I developed that risk assessment, and I conducted both a human health review and risk assessment, as well as an ecological risk assessment.

Q. Okay. Did you take a look at any of the regulations in the state of Louisiana with regard to your work?

A. Yes, we looked at 29-B, we looked at RECAP. We also looked at some of the water classifications. Those types of things that we looked at.

Q. Did you take a look specifically at what Mr. Cash and I were just referring to, LAC 43, subchapter 1, Part 3? Did you take a look at this

specific provision?

A. Yes, I did. And one of the things we do in the baseline risk assessment in the EPA protocols, we have to look at intended purposes as well, and so I did look at definition of contamination in the context of my study.

Q. Now Mr. Cash asked a couple of questions about the intended purposes and suggested it was the intended purposes of the landowner.

If we move -- if we read through this contamination provision right here, read USDW for soil in such quantities as to render them unusable for their intended purposes, that's referring to the soil; correct?

A. Yes.

Q. Has your ecological assessment been focused on the soil in this sub chart? Not what the landowners' desire is or whatever his wishes, as Mr. Cash suggested --

A. Well --

Q. -- when looking at intended purpose?

A. When I look at the intended purpose, my goal is to look at, say: What was, what was the habitat originally? What was it used for? What is it being used for currently?

I also look at, you know, what's in the past and what it's going to be in the future.

For this particular site, we have to fill out a Form 18, which basically gives you kind of an overview of whether there's a need to go to an ecological risk assessment or not.

Form 18, if you had a spill on a parking lot, obviously there's not much that's -- I don't think we have limited paved parking lot habitats, so we don't have to do an assessment there.

One of the things I'm required to do is to look at the potential use of the property, as well as intended use.

Under RECAP --

Q. Did you do that? Did you do that here?

A. Yes.

Q. Okay. Would you like to explain what you did?

A. Well, we, we looked at the site use. I made a site visit. We saw that the site was basically being used in part for oil production activities, but I also saw evidence of hunting. I did find out later that the land is leased for hunting and fishing activity. We did see hunters and fishermen there. We saw deer blinds there.

And so based on that evaluation, I made a determination -- and also the fact that there was elevated land, there were utilities -- the property would, potentially could be used for deer camps, recreational value, especially the high value that it has in Louisiana. So I basically listed intended purposes basically would be for recreation and potentially residential.

Q. Did you take a look at the 1941 photograph we talked about in these proceedings?

A. Yes, I did. I looked at this one, and I looked at this one in quite a bit of detail.

And you can see that it was basically a cypress complex in most of the areas, to the east and to the west of the right-hand canal.

There are oil operations up above, and that area looked to be cleared at one point in time. There was a cypress forest basically in this area. Cypress are a keystone species. If you have a cypress complex, very important.

Q. All right. Did you look at a more recent photograph?

A. Yes, I looked at -- well, I looked at quite a bit of times. I looked at various years. I went through all the photographs we had, all the way up to

the most recent images. And you can see a change in the forest canopy and in the complex.

Q. Okay. Did you look at, or did you look at any of the data coming from the sampling effort taken by ICON and Mr. Edwards and GHD as a part of your charge in your case?

A. Yes. What we did is we -- I then looked at the data that Dr. or Mr. Miller provided, plume maps. I also looked at defendant's data. I then looked and overlaid the contamination, especially the salt levels, over the areas of especially what appeared to be hydrologic changes in the vegetation.

This would be an overlay of the EC and the SAR in the zero to four foot.

In ecological risk we are most concerned about the zero to four, root depth typically. We're interested in four and deeper if it happens to be in a shallow groundwater, a lot of contamination, or if that water basically discharges to surface water. And so this was very important to me.

Q. All right. Did you look at any depths a little bit deeper?

A. Yes, then I went ahead again -- again, since this was in the soil, again four to eight.

This becomes important when you have shallow

groundwater because then, if you have movement up and down of the water, then that transports salts back to the surface. So I expanded my depth range a little bit; which basically in the EPA guidelines, you are required to do that.

Q. All right. Did you look at anything below eight feet?

A. I looked at it all. Of course when I was looking at the exceedances in RECAP and 29-B, I also looked at deeper levels. For example this is the 8-to-12-foot interval.

Q. So once you have an understanding as to what the historical use of a property was -- like we see in 1941 with cypress trees -- and you understand what the contamination levels are in this area, what do you do as an ecological risk assessor to figure out whether or not an area has the ability to regenerate those trees?

A. Well, it became apparent, you know, that in a risk assessment, both human health and ecological, we try to focus in on the risk driver. That's not to say that some constituents we have here are not a risk; but what I look at is what becomes your critical cleanup level.

And when I looked at the site and I reviewed Mr. Miller's remediation plan, I found that, if the

salts were remediated, we get most of the risk drivers for the ecological risk -- you know, the arsenics, the bariums, those type of materials -- and then the focus then came to remediating the salts within the root-depth range that would impact the cypress.

So at that point in time then -- now I'm focused in on the contaminant and I'm focused on the receptor.

Now remember, the cypress is a keystone species. It's indicative of an entire system, a very important system; and so we started looking at that.

At that point in time I reviewed -- most of the literature I already had. We are -- by the way, we are developing in our risk assessment model, which will be required by everyone, we do have a freshwater habitat, which includes the riparian zone. So we will be adding in the next version of that levels that are protective of plants and plant recruitment.

So we are already collected quite a bit of data. So I basically did a literature review to determine what would be an acceptable soil EC concentration for the site.

Q. Okay. Did your literature review for what would be an acceptable level to regenerate this site of cypress, did you turn up any articles?

A. Well, I did several. I think we have another cite. Chronic levels --

This is not all the literature. This is just an overview.

And when I looked -- one thing you have to look at is that we find that -- I assist the Texas Commission on Environmental Quality with reviewing ecological risk assessments.

And now what happens when people submit one, they use our model; and then what they will do is, if they have better, more site-specific data, they provide that. We assist them in reviewing that data to see if it's representative of the site conditions.

What I do -- you have to be very careful because people will use, for example, a lowest observed effect level --

THE HEARING OFFICER: Mr. Jones, we're going to break as soon as you finish your -- for lunch, as soon as you're ready.

MR. JONES: Yeah, okay.

BY MR. JONES:

Q. Let's talk about the literature that you reviewed and then we'll come back.

A. So what I did is I came up -- this is not a very good picture. But we're trying to find out what

would be a suitable level for recruitment. So we look at all the literature and we review that literature. And we came up with basically about a three-part ppt, and that would be: No effect of height -- I believe it said that there was some reduction -- but again, that was just a 60-day study.

When we go to a longer study, it's about two parts per million. And based on this review, to give us a little bit of a safety factor, we basically determined about a 2.5 ppt would be an acceptable level.

If I were doing a reintroduction study, that would be the level I would set that we would want the soils to be before we reintroduced the, tried to restore the habitat.

Q. Let me ask one last question. Is that based upon your literature that you've reviewed here?

A. Yes, this is my literature review data.

Q. And let me just be clear. Is this something that you typically do in your long history of being a risk assessor?

A. Oh, absolutely.

Just to give you an example: In the PCL database, we have over 30,000 annotated citations in that database that we keep track of. It's pretty

extensive.

MR. JONES: This would be a good time to break for lunch, if that's what you would like to do.

THE HEARING OFFICER: Yes, this is a good time to break.

Let's come back at four minutes after one.

(Luncheon recess taken.)

AFTERNOON SESSION

THE HEARING OFFICER: Okay. Okay. We're back on the record.

Mr. Jones?

MR. JONES: Thank you.

BY MR. JONES:

Q. So before the lunch break, we were talking about -- I think the last question we asked was about whether looking at the literature, looking at the original intended use of the property, whether that was something that you typically do in performing these ecological risk assessments.

A. Yeah.

Q. Is that correct?

A. Yes. We do an exhaustive literature review of all the toxicological data.

As a matter of fact, in many of the reports, we actually do a tox profile of each contaminant. I didn't produce those in my report, but I do have those.

Q. Okay. Well, did you go back and look at the literature in this case with regard to regenerating cypress on this property?

A. Yes. We looked at the literature. And I produced that in my supplemental report, the literature review.

Q. All right. Well, based upon your review of that literature, do you have an opinion as to whether or not these cypress can be regenerated with the levels of salt that we have on the property?

A. Well, based on the soil, the salinity, EC levels I saw at the site in many areas -- now, some parts of the site have cypress trees on them. The project -- but the site, the actual inundated area where the salts are in those areas, those levels exceed levels that would allow seed germination and seedling growth.

Q. Okay. And let me ask you: What literature supports that opinion?

A. I think that's in my literature review, the next slide.

Q. The next slide?

A. This is just a summary of -- we looked at a range, and we look all the way from the mortality, all the way up to a no-effect level. And then what I provided here -- and again I apologize. It's not very clear. We look at how long was the test, and that increases from chronic or an acute, just a very short period of tests.

And as you'll see up here, the 4 ppt resulted in developmental problems and -- it's hard for me to

see -- but the bottom line is the 3 ppt -- again, it's a very short-term study. Essentially no effects at 3 ppt's, short term, and then 2 ppt, a longer duration study. We still saw reduced height at 2 ppt, but again looking at that, reading those articles, we established that 2.5 ppt is a suitable reestablishment level.

Q. Okay. Well, along those same lines -- and this is a question about your opinions with regard to regenerating -- do you have an opinion as to whether the salt coming from the oil and gas activities contributed to the loss of the cypress trees in that area?

A. Yes, because even though the hydrology changed at the site, the inundation, unless it's excessively high inundation, would result in the death of the trees.

You know, if you're looking at three feet or less, that's one thing. If you're looking at six feet, I've observed trees that have been inundated for long periods of time at six feet and survived quite some time. They are not the healthiest trees in the world, but they can survive.

So, really, what you have to have is -- I disagree with other experts that the hydrology would have killed the trees. I didn't see anything in the

records and based in the photographs that showed an inundation of the levels that would cause mortality in the trees.

Q. Okay.

A. Mature trees -- let me qualify that -- mature trees.

Q. Right. So if we go back to the definition of contamination --

The next slide, please.

-- so how does all this work into the regulations of the DNR, the Office of Conservation?

A. Well, it -- when we look at all the requirements -- the contamination, again, is introduction of contaminates into the soil that would render them unusable for their intended purposes.

I look at that and look at what was it historically. It's currently being used for hunting and fishing obviously.

A cypress complex marsh or swamp is very desirable. And so if we look at that purpose, I would look at restoring to what it was originally. Now, that's me as an ecologist and also looking at Louisiana.

The importance and the trend -- there's many publications out there about the trend in losing our

cypress swamp habitats and their importance.

You know, I think the state, I think that the conservation departments, everyone would agree that that would be a desirable endpoint.

Q. All right. I want to switch gears for one second and ask you: Did you happen to read Dr. Rodgers' testimony from the other day, when he testified last week?

A. Yes, I did. I also reviewed his supplemental report.

Q. Did you, did you see in his various reports and his testimony last week his opinions with regard to whether barium becomes soluble in the presence of salt?

A. Yes, I saw that opinion.

Q. Do you have an opinion on that testimony from Dr. Rodgers?

A. Well, I do.

I've worked with barium for quite some time. I spent three years evaluating production water, injection water, evaluating hydrogen sulf- -- sulfate-reducing bacteria effects on deep well injection systems.

And so basically I ran water analyses, hundreds and hundreds of water analyses, looking at production water.

It amazes me that everybody says that all the barium came from drilling mud, when that's only a two- or three-week event; but yet we disregard the barium that's produced with the produced water over 40 or 50 years that's being discharged to the site.

If you look at produced water, produced water has both high chlorides -- and a lot of people -- of course you-all do -- but most people don't realize when you produce oil, you produce vast quantities of produced water which have to be disposed of.

When I looked at -- there's very little water-quality data on this site. But when I looked at injection reports and several studies, you have high levels of barium, you have varying levels of sulfate; you have high, high levels of chlorides. And you have to -- as a risk assessor, I have to consider that as another source, not just drilling fluid.

Now, I acknowledge that barite is used in drilling fluid. But also in the Alberta papers and other papers, even barium sulfate in reducing conditions in the presence of high chloride, and even studies done by Dewell demonstrated the solubility of barium would go up 25-fold in the presence of high chlorides under reducing conditions, which is what you find in an anaerobic pit.

So I disagree with that emphasis. I think you have to look at -- and the other thing is that if the barium -- to support my opinion, if the barium is insoluble, why do we find soluble barium in the groundwater? If it was totally insoluble, it wouldn't be in the groundwater.

Q. Well, do we find it in the groundwater at all on the property?

A. We do find it in the groundwater.

Q. Let's take a look at this slide.

How does this help you with your conclusion?

MR. LAPEZE: Tom -- Tom, if I can make an objection. We're dealing with groundwater now.

MR. JONES: Oh, no, we're not getting into groundwater.

MR. LAPEZE: Well, he clearly said we're finding barium in groundwater.

MR. JONES: Well, the ruling is -- we're talking about this very clear distinction here. We're talking about why their plan --

THE HEARING OFFICER: Are you finished your objection?

MR. LAPEZE: I'm finished.

MR. JONES: I think his objection is we said

the word "groundwater." Right? Something like that. Or we're getting into groundwater.

We're not getting into groundwater. We're getting into why their plan as they have proposed will not -- and certain assumptions in that plan will not work. And if that happens to touch on groundwater, well, so be it.

I mean, if it's part -- there's no doubt that they contaminated the groundwater. They haven't admitted to that. That was their own decision.

But if the plan that has been submitted to the Panel will not work because of evidence that it's turning up in the groundwater, that seems to me to be relevant. I mean, I'm not suggesting -- I know they didn't admit to it. I don't know why they --

THE HEARING OFFICER: I'm going to overrule the objection.

At the outset when we talked about scope, I think that was actually discussed; that is, if there was something that would render the soil plan defective.

MR. JONES: Yeah.
THE HEARING OFFICER: So I'm going to allow this testimony.
THE WITNESS: So to restate my point is that, based on the soil, if --
THE HEARING OFFICER: We're just talking about soil now.
THE WITNESS: Soil, yeah, based on ...

But the soil, if I were to take a test and put that under reducing conditions, I would find, what? Dissolved barium in the water sample, and it becomes a source, a soil source, pathway to other receptors.

So I disagree with that. I don't think that we can simply look at that.

The other thing I have a problem with is using x-ray diffraction to speciate -- x-ray diffraction is a mineralogical test. It has to be backed up with mass spec analysis to determine what it is. It just tells you percentages in crystalline structure. And that's also not the DNR-accepted method for looking at barium either.

So I don't see that, even though the spectral analysis of the barium in the

sediment shows that it's 46 percent barium sulfate, well, what is the other percentage? It doesn't, it doesn't speciate for you to that level.

So I place very little confidence in the x-ray diffraction of barium.

Now, that's me looking at fate and transport of the chemicals and where they go.

BY MR. JONES:

Q. Okay. So let me move over to, let me move over my last topic with you, Dr. Rogers. And this is where I ended my cross examination with the other Dr. Rodgers, and I want to cover the same thing and show you a series of pictures.

MR. JONES: Would you move to the next one, please, Connie.

BY MR. JONES:

Q. We've talked about this one earlier; correct? This served some purpose in your opinions that you've offered here today.

A. Yes.

Q. Correct?

A. Yes.

MR. JONES: All right. The next one, please.

BY MR. JONES:

Q. 1973, you've seen this one too?
A. Yes.
Q. Did you use that as part of the basis for your opinions?
A. Yes. I looked at these photographs very carefully before I even went to the field, to look at the historic conditions as well as current conditions I could see.
Q. In assessing the risk, why is that important?
A. What's that?
Q. Why is that important to look at these very carefully?
A. Well, if we look at -- I know the other Dr. Rodgers used Hill's Causations.

Those are primarily for epidemiological, you know, looking back at sites.

And so what I want to do is look at a site and determine: Do I see visual impacts? Yes or no. Reduction -- and those would be different measurement endpoints. You'd see actual mortality in humans or wildlife or changes in vegetative cover.

Do I have a causative agent? For example, what was the release?

Well, I saw a change in, what, hydrology. I see a change in salt concentration. So those are two

possible areas.

Then I look at these maps and I say, Well, do I see mortality in these pictures from cypress?

And the causation would say, Well, I don't have any data that would show that the level of inundation we have here caused the death of those cypress trees. So then it would have to be -- the other factor would be salt. So I'd have to look at those -- salt as a factor.

And so aerial photographs, looking over time, I can do all the predictions in the world; but it's better to see a photograph and track those over time and do kind of an interpretation of what's happened to the site over time.

Q. All right. Well, I want to go to the next one, which is the 2010 photograph. I picked maybe one of the more recent ones.

Did you look at this as well?

A. Yes. It shows ... So you see, basically, historically, in the lower end -- not in the cleared area up at the top -- but you did see a cypress forest in that area. And now you see basically more of a flotant marsh environment in that area.

The next thing I'd want to do is look at proximity to the contaminants and overlay the various

contaminants found at the site and see if there's a correlation. And then that's very useful for me as doing a retrospective analysis.

Then I can go forward with the predictive analysis and say, Okay, what would it take now to restore that? Do those levels exceed acceptable levels for basically mature tree mortality?

Do the levels -- do the hydrologic conditions -- that becomes important now -- what would it take to basically allow for seed germination and basically let -- or seedling growth? As you've heard before, you know, we need seedlings. They won't germinate -- this is important -- they can stay viable for several years underwater.

A. If you get a low-water condition, then -- for 30 days or so, then they can germinate. They need about 45 days, and they get -- they have to grow ahead of the rising water. They have to grow -- it's kind of a race, you know, to see if they can -- they can even tolerate inundation for short periods of time.

But what would it take to get this back to the original state and as well as the intended purpose?

I can assure you, the flotant marsh, I had a difficult time getting around. I'm a little bit handicapped, so walking on that flotant marsh and

falling through, that was just something that's very difficult. I'm sure you-all have done that before, but it's very difficult.

Q. All right. So I asked Dr. Rodgers, the other Dr. Rodgers --

MR. JONES: Back up one second.

Q. That if we look at the current state of the property.

MR. JONES: Please back up one more.

Q. We looked at the 1973 photograph, and then we have an understanding --

MR. JONES: Back up one more. Thank you.

Q. -- 1941, we have an understanding where we started.

Is it clear to you, Dr. Rogers -- on our side, Dr. Rogers -- is it clear to you that the oil and gas operations had an impact on the natural vegetation on the property?

A. Looking at the aerial photography, looking at the releases, looking at the contents of soil compared to what I know about the production water characteristics, I have no doubt in my mind that this site has been impacted by oil production activities.

Q. A lot of times we talk about preponderance of the evidence. Are you maybe 51 percent sure --

MR. JONES: Let's look at the next picture.

Q. Are you about 51 percent confident that the oil and gas activities had an impact on all these cypress areas in this area, or are you about 99 percent sure?

A. Well, you know, scientists don't never say it's a hundred percent. So I'm very, very confident -- I'll use my scientist term -- I'm more than 95 percent confident that those are --

Q. Did you read where Hess' Dr. Rodgers would not acknowledge that there had been any environmental impact right there?

A. I just don't see -- we use aerial photography analysis. We have hard samples of the area with EC levels that exceed the levels. We know what the concentration, the releases were over time. We see it. We also see the areas not associated with oil operations. We do have cypress marsh, cypress swamp in those areas.

I don't think you can dismiss at all the impact of oil production activities. I don't see how you can do that. I'm very confident.

Q. Well, hasn't Dr. Rodgers -- a qualified guy, he's got a lot of degrees. He's from Clemson University. I mean, do you -- having read his

testimony, how is it possible that he couldn't agree that there's environmental damage caused to the natural vegetation?

A. You'll have to ask him. I don't know. I've dealt with Dr. Rodgers in the past -- and I think it was on this site -- he also said that there's 600 times pure lead would be okay at this site too. So I don't know.

MR. JONES: Okay. That's all the questions I have.

THE HEARING OFFICER: Mr. Lapeze?

CROSS EXAMINATION

BY MR. LAPEZE:

Q. I just have a couple of follow-ups, Mr. Rogers.

You mentioned your site visit out to the property. You went out to the site once; correct?

A. That's correct.

Q. And you were out there for about four hours?

A. About six hours.

Q. You say six hours?

A. I believe it was about six maybe. I was on the site and I saw the -- I'll have to look at my notes, look at my -- I'm not sure.

Q. These are your notes; correct?

A. That's correct.
Q. And at the top, this is your handwriting; is that right?
A. That's mine. Yes, unfortunately.
Q. Yeah. So it says, "Arrived at the site 12:00 p.m."
A. Okay. Right.
Q. And then at the bottom, it says, "Left site at 4:00 p.m."
A. Okay. So that would be about four hours, yes.
MR. LAPEZE: Okay.
And, Connie, could you pull up their slide 14, please.
Thank you.
Q. Dr. Rogers, you made mention to the Panel about the solubility of barium when it comes into contact with salt.
In terms of the AOIs that have been identified on this property, with respect to barite, total true barium, do you know what those AOIs are?
A. I can't remember right now where those were specifically. I know that they were addressed in Mr. Miller's original remediation plan. I'd have to go back and look at my notes.

Q. Okay. So that's information -- the Panel has that information to be able to made that correlation --

A. The Panel, I believe they have that information. I just -- you know, I can't remember exactly which ones they were, without looking at my note.

Q. Correct.

MR. LAPEZE: And, Connie, if you could go to slide 8, please.

Q. And as you made pretty clear to the Panel, you relied on literature values to come up with what you ultimately concluded to be a salt-tolerance threshold of 2.6 parts per thousand; is that correct?

A. 2.5.

Q. I'm sorry, 2.5 parts per thousand for salt with the cypress trees.

Again, you didn't do any field work or any lab work to come up with that value; correct?

A. No, I didn't do any field work.

I will tell you that, through my years and years of looking at sites and looking at soil salinity levels, that pretty well matched up my experience.

But to answer your question, no, I did not do greenhouse, potted plant studies on that. I relied on the scientific literature.

But that's the reason we do science and publish is so we don't redo the same thing. We can go on and discover new things.

Q. Right. So the answer is no, you didn't do any field work. You could have done field work out there with respect to the salt tolerances.

And there's actually cypress trees that are on the property; correct?

A. Oh, absolutely there are. In un-salt-impacted areas, we do have cypress trees.

Q. In terms of making any correlation between salt and cypress trees on this property, you could have done that work and you just didn't do it; right?

A. Well, I did. I looked at the aerial photography and overlaid the salt plume maps, and there was a direction correlation. And that's -- if you look at Hill's Causations, that's adequate.

I mean, how can I compete and do in a couple of months what Mother Nature has done in a field laboratory over 50, 60 years.

Q. Are you aware that this lawsuit has been filed for over 10 years?

A. I'm not -- that's not something I'd be concerned about.

MR. JONES: Objection. Beyond the scope.

THE WITNESS: Even 10 years for --
THE HEARING OFFICER: I mean, that's an argumentative question. That's not a big -- just move on.
BY MR. LAPEZE:
Q. Well, my point here is: Some of these studies have been done in 60 days; correct? Four months? Six weeks?
You would have had the opportunity to do studies based upon the analysis that we have and your own documents that you relied on; correct?
A. Well, I could have -- I wouldn't have gone back and done three and two. Maybe we could go back and do 2.5 and see if that was realistic, but -- if we saw any improvement. But why redo something when we already know the answer? I mean, I'm not going to do seed germination on a 10-ppt level. I'd just would be wasting my time.
I'd really have a hard time getting anybody to fund that kind of research when I, based on my literature review, already know that it exceeds the mortality level for seed germination.
Q. You also talked about intended purpose, intended use. And I believe Mr. Jones asked you a question.

Just to be clear and so the Panel is clear, you're saying that the soil has an intended purpose?

A. Well, the site --

Q. Under the definition of "contamination," let me be clear.

A. Well, the definition of contamination is the soil. But when I look at the soil remediation levels, I have to look at what was its intended purpose.

Q. Intent usually comes from a human, correct, not from soil?

A. Well, it can.

Now, if we go back to RECAP, you know, if you're going to use, for example, an industrial versus a nonindustrial standard, you have to have a declaration that it's not going to be used for nonindustrial uses.

If you look at RECAP, if we have unknown and it's used for recreational, then we consider it nonindustrial.

When I look at this site as a risk assessor, I look at it and say, Okay, what could the site -- what is it based on? What is the potential projected use?

When I see it's already leased to a hunting club for hunting and fishing, already being used; it has elevated land suitable for building cabins in those

areas.

I see that the oil industry is dwindling down, will probably be gone. What use, viable use would be left other than recreational use? And for recreational use, reestablishment of the cypress swamp would be very, very desirable.

Q. We appreciate your citation and recap, but you didn't talk to a landowner in conjunction with doing your report in this case about the intended use of this property, did you?

A. No, I didn't speak to him about that --

Q. You didn't talk to any of the lessees that lease the property about the intended use of this property, did you?

A. No, I did not. No.

MR. LAPEZE: Thank you. I think that's all I've got.

MR. JONES: No questions.

THE HEARING OFFICER: No more?

(Panel conferring.)

THE HEARING OFFICER: Okay. Mr. Campbell?

BY MR. CAMPBELL:

Q. Dr. Rogers, I just have a clarification on the -- you talked about the source of barium contamination. I think you were indicating that, from

produced water, you can get barium in produced water. And you were talking about the contamination of groundwater or the soil when you were speaking about that?

A. You get both.

Q. Okay.

A. What I found is that -- one of my concerns is that people just automatically dismiss barium because of barium sulfate. And that's only a very small part of the equation.

When you produce the barium, it's dissolved when it comes out of the groundwater; and then when you change -- obviously, when you change pressure, temperature, or pH, this water, produced water, in this zone is about 6, or acidic, so it comes back up. And if you change that pH, put that into an area, then that would precipitate out either barium sulfates or barium chloride, whatever you have available to you, and those would end up in the sediments in the pit areas or in the upland areas where it's been discharged and left in those areas. And then, obviously, if it's water-soluble, then you would find it in groundwater, shallow groundwater.

I just use that as an example to show you. It's all insoluble. But why do I see it there? That's

a test, that's a good test, like a leachability -- it's Mother Nature's leachability test to say that, Look, if it's so insoluble, then why do we see it?

And the key is, if you look at barium hydroxide, or barium chloride, those compounds, very toxic at very low levels. So that's the reason I'm interested in it. It only takes a very small percentage for that to be of a concern to me in both ecological and human health.

Q. Would you think you would see barium rates are as high as, like true total barium, hundreds of thousands of what you're saying here? Or that the concentration wouldn't be near that high?

A. Well, they won't be that high as the total, but I don't think you could use the x-ray diffraction. It doesn't -- even though it tells you, for example, if you're over -- when I see the levels 120 or 200 times the acceptable level, only one percent has to be the non-barium sulfate fraction. So that's what concerns me.

And so, if you're going to use that argument, I can't as a toxicol- -- environmental risk assessor, I can't dismiss unless I have data. And I'm telling you, the x-ray diffraction does not give you that answer. You have to follow that up with mass spectro-analysis

to determine what it actually is for speciation.

I would -- I'm using that as my --as a line of evidence. If it's a hundred percent insoluble, then you wouldn't see a concentration bearing the barium away from the source area. So it tells me that it's not all insoluble in those areas.

MR. CAMPBELL: Thank you.

THE HEARING OFFICER: Miss Love.

BY MS. LOVE:

Q. You spoke of the barium being reduced down in an anaerobic environment.

Is there any -- maybe I've already overlooked it -- but has there been any studies to the dissolved oxygen contents in the soils and out there?

A. There's a real good study that was done by the Department of Environment in Alberta that looked at the whole issue, and it kind of summarizes those studies.

Also Dewell has done several studies on the solubility of barium in the presence of chloride and other compounds. So, yes, there's quite a bit of information out there on that.

And again, it's a complex issue. You know, it's -- of course, I thought geochemistry was always complex. You know, that's just the way it is.

But there are studies out there, yes.

And a good summary of that Alberta paper is very, very good.

Q. But nothing like the actual -- sorry.

Yeah, there's nothing site-specific so far that we know of?

A. No. We haven't done that. But had I have used that as a line of evidence not to look at it, I certainly would have produced and done that type of analysis.

Maybe that's something we should do, but it's -- there are a limited number of labs that can really do acceptance.

It's kind of like tissue sampling. I only have two labs, for example, that can do arsenic speciation that I accept and review. It's real complex. You know, you have to look at the digestion process.

And that's one thing that's really critical on barium is the -- if you're in a barium sulfate, it takes a very harsh acid extraction. You have to look at those types of things. And does that mask the less soluble chlorides?

It's a fairly detailed analysis.

MS. LOVE: That's it.

MR. PENNINGTON: I have no questions.
THE HEARING OFFICER: Are you finished?
MR. JONES: We rest.
THE HEARING OFFICER: Any other witnesses?
MR. JONES: No, no. We limit our response to their case.
THE HEARING OFFICER: Okay. You're free to go, Dr. Rogers.
Okay. We are -- have you guys, gentlemen, talked about the closing process?
(Witness excused.)
MR. CASH: We're just going to do it like a regular trial: I'll go; he'll go.
THE HEARING OFFICER: You'll begin.
MR. CASH: I'll begin. You're going to begin and do rebuttal.
THE HEARING OFFICER: So go ahead.
Mr. Cash?
MR. CASH: Let me do this so everybody can hear, including the court reporter.
I told you at the beginning on my opening statement I would be brief because you-all are scientists and want to hear from scientists and not lawyers. So here I am again. And again, I will be brief because

you've heard from the scientists and you don't need to hear from lawyers, but there are some things that I want to point out.

And I kind of want to start where Ms. Love stopped with the question.

What we've seen today and in the past few days are rock-throwers. I mean, that's really what they've come to do. They've come to throw rocks and see if they can break some holes in the most feasible plan that's been submitted to you.

Mr. Miller did a most feasible plan but chose not to submit it. He chose not to submit it where it would have the scrutiny of scientists because it moves over 300,000 cubic yards of a thriving environment, and he didn't want that to come under your scrutiny. Costs millions of dollars, tens of millions of dollars, over $60 million of soil alone. That scrutiny wasn't there.

They put Dr. Rogers on to hypothesize about what could possibly happen under some remote conditions in the Alberta study. And I invite you to read that Alberta study. I

think it's in the materials you have. I invite you to read it and see if it says what he says it says.

Because at the end of the day, the answer to your question and basically the answer to your question over and over and over is: Did you do a site-specific study? Can you tell us what's going on here? No.

And time and time and time again, when our people were asked, the answer was yes.

And so what we were here to do from the get-go was we admitted to regulatory responsibility for the soil in this 220 acres.

Now, what this hearing has been about from this side of the aisle is not what is but what they wish was.

Think about that.

You have literally been asked by Mr. Miller to completely change 29-B.

Is there any salt parameter in a submerged wetland?

You-all have been doing this for years, you know the answer to that question.

He knew the answer to that question when

he was asked that in deposition, point-blank: Is there any salt parameter under 29-B for a submerged wetland? His answer was no. But now it's going to shade a little bit.

Well, no, not if you're just doing a certain kind.

Uh-uh.

We're not here to rewrite the rules. We're not here to rewrite the regs. We're here to enforce the regs as they are.

I asked him point-blank: Can you point to me anywhere in 29-B where subsidence is addressed? And maybe that's where we need to start and finish a little bit. And I'll go through some other things. But that's really where I want to kind of put the focus for a second.

This is a limited admission hearing before a Panel of DNR, which has a very specific purpose. Mr. Jones and the landowners have their private damage claims. If they want to sue us and they want to prove to a jury that this subsidence is our fault and we've taken away their opportunity to be loggers or grow cypress forest, okay, that's

a private damage claim. There will be a jury and judge who will decide this.

But we're here talking about regulatory provisions, the regulations. There is no subsidence regulation. There is no regulation under 29-B that he can point to that supports what he's trying to do.

Now the reason they are so keen on salt is there isn't much else to talk about. There isn't much else to talk about.

The only metal of interest was true total barium. The only person who did site-specific analysis of the barium was our Dr. Rodgers, our Dr. Rodgers, who is world-renowned in what he does.

Now, they tried to kind of hedge their bet on the wetlands. Yes, it's a flotant marsh; it's inundated. But over here in the one day I was out there, it was dry in some places.

Mr. Pennington, you asked some pretty probing questions on that.

Well, are you saying it was never inundated or was it dry that day?

And there had to be an admission. He

said, Sure, it's inundated. Yeah, it gets wet.

This is an inundated wetland.

And the other place it matters is the salt parameters, and the salt parameters are almost exclusively -- in fact, Mr. Jones made a big deal about this. You'll remember the day he put up the picture of the flotant marsh, and then he showed the yellow line that was the salt plume, and he made a big kind of "aha" moment that they traced each other.

Look, it's right over. This is right where it is.

Well, that gun kicks as much as it shoots, because the problem with that is, if in fact that portion is undeniably an inundated wetland and that's where the salt is, then that salt need not be removed under 29-B.

The intended purpose is an interesting deal. What's the intended purpose?

And they have tried to dance around that.

Well, it's what -- it's the historical

use.

But that's not what the rule says. It says, What is the intended purpose?

Now who can tell you what they intend to do with their land?

The whole reason we have 29-B and we have sections where it has to be landowner consent, is to say, what is the landowner, and what is the oil company. And what's owed to the landowner under the regulations.

Well, what does the landowner intend to do with this?

Where was the landowner?

The landowner could have taken that witness stand, could have raised their hand and could have sworn: This is what I want to do with the property.

If that testimony would have helped them in that area, don't you think they would be here?

The other thing that I want you to focus on is: How could they intend for this to be a cypress forest when they bought it in 1998 and it was well -- it had been a flotant marsh for a long, long time, at least 25

years by then, and a thriving flotant marsh.

Did you hear anything, anything at all from this side challenging the NORM cleanup? Because I didn't, not a word.

So as to those two AOIs, there has been no challenge to the NORM whatsoever. They haven't qualified anybody on NORM. They haven't had anybody testify on NORM. They haven't had anybody testify as to the plan on NORM.

So as to those two, that is conceded. There had been no testimony before you, nothing about NORM.

And I'm sorry I'm not more organized. This is kind of -- we thought we would be doing this tomorrow. So I'm jumping around a little bit, and I do apologize for this.

This is something that I think is interesting: Much was made of the fact that we're going out and doing additional confirmatory sampling. There was cross on that. They have to do all this, a bunch more testing. They are going to do a bunch more testing.

Here's the irony of that: The only way

we were brought -- it was brought to our attention there was a problem out here, because plaintiffs decided they were going to file a lawsuit, and plaintiffs' experts went out and did all the delineation they needed to do. They went out and did what they thought was necessary, and somehow they had enough data. They did -- the data that was shared and split with all these soil borings that were done.

It was enough for Mr. Miller to come up with $180 million plan. It was enough for that. It was enough for Mr. Jones to file a lawsuit blaming us and saying they needed $180 million.

But when this Panel is asked to come up with a reasonable feasible plan to actually remediate this property, suddenly there's not enough data.

We started with where they drilled. And when they drilled one hole, we delineated around that for the exceedances they found.

If they didn't find an exceedance, we assumed they had at least done a competent job in finding -- they were looking for

exceedances. And where they found one, we backed it up. We went and checked all around them to delineate that.

We've gone out and said, We'll do the whole suite again, if that's what's necessary as a confirmatory sample. And we'll do it before and do it after. But that's above and beyond.

This was their lawsuit that they brought. We made a limited admission based on that.

So I think it's ironic that they throw stones at us for not delineating, when they are the ones that brought the lawsuit and submitted three plans -- not to you-all, but for the jury -- that they had plenty of data.

Inundated versus submerged I don't think is even a close call. They put nobody on who comes close to Dr. Rodgers' experience in wetlands. Our Dr. Rodgers was very clear on that.

And you know what, let's talk about that for a second.

Credentials matter. Okay? Scientists earn their credentials. They work hard for

them. You-all know that as well as anybody. So what I want you to do is we've got the risk to plants and animals.

They brought Dr. Rogers. We brought Dr. Rodgers. You heard their credentials. You heard who has been recognized. You heard who has received the President's Award. You heard who is looked to all over the country. It was our Dr. Rodgers.

You heard who did site-specific testing. You heard who went out there and basically did the work he did. You heard who looked into what the barite actually was. Not theoretically; really.

Dr. Rodgers versus Mr. Millner: No risk to human health.

A toxicologist who has done risk assessments all over the world, a toxicologist who has been called on for major issue after major issue after major issue, who told you on this site, based on what is out there, there is no risk to human health on AOI 1 and AOI 2.

Dr. Rodgers again didn't go against Dr. Frazier, Mr. Miller and Mr. Edwards. You

heard how many sites Mr. Edwards has closed, how many pits he has actually closed.

What about Mr. Miller? You didn't hear that.

Go back and look at their credentials. Look at the qualifications when you're deciding. Because you've got conflicting testimony, decide who to listen to.

And on inundated versus -- on elevated versus inundated, I think that showed through glaringly.

Basically Mr. Millner said, like we talked, it was dry one day. And you asked him some probing questions: What kind of plants did you see?

Dr. Rodgers answered all those questions. In fact, he gave you whole pages of what was seen out there. So credentials matter.

You know they talk about, to do passive closure, you have to landowner consent. And it's kind of like everything else. They read the parts they like and they skip the parts they don't.

Part 3 of that very same article says

that the Commissioner reserves the right to waive any of those requirements under number 2, and one of them is an affidavit from the landowner. And let's think about why.

29-B is a great regulation set up to basically take care of things. And the assumption is, on the "no more harm than good" on a passive closure, the thought is, well, the landowner doesn't want to harm his property either. So if it's going to do more harm than good to dig it out, everybody ought to be on the same team.

That was before Corbello. That was before legacy lawsuits. That was before you could make millions of dollars by having a cleanup plan that wasn't the best thing for your property, but it's the best thing for your pocketbook.

So thank goodness for paragraph 3 where you-all can look at it and say, Okay, for the land, is it going to do more harm than good?

And I think it was very interesting and very telling that they put up their witnesses, and not one of them -- Mr. Miller could have been asked: Will it do more than

harm than good to leave this? That question was not asked and was not answered.

Dr. Rogers was put up there. He was not asked: AOI 1 and 2, would it do more harm than good to leave it? He was not asked and did not answer.

So that opinion was never solicited. It was never solicited for a reason.

At the beginning of this, we told you what our limited admission was and what the scope of it was. We looked at the plaintiffs' property. We went through, we talked about the AOIs.

And I want to talk about AOI 5 for a second. You heard about that. Let me find it because I made a note.

Recontamination of AOI 5; right? I've taken Mr. Miller's deposition, read his reports. First time I ever heard about this today, but that's all right.

Mr. Miller claims that his concern for soil recontamination -- I want to make sure I get this right -- in AOI 5 occurs through benzene volatilizing from the groundwater into the soil through the unsaturated zone.

Do you remember that? You asked some follow-up questions on that.

Mr. Miller's groundwater elevation data in the Lafourche Parish soil types confirmed that this site has no unsaturated zone. Okay?

Think about the soil types here. There's a zero water table. There is no unsaturated zone. It is filled with water, water which holds down the groundwater below. Yet he wants you to believe that his hypothesis for benzene transport is via volatilization.

It can't happen. The way he says it happened, it can't happen.

And you-all go look at the data that's out there. Go look at what the soils are. Go look at where the water tables are. Go look at where the hydraulic head is above and the water below.

And here is what's telling: His whole big theory -- AOI 5 is right in their crosshairs. Right? They came out swinging on AOI 5. And I asked him point blank: Okay, you say that the clay pan -- there is

basically supposed to be this barrier. You say it got recontaminated with benzene from below. Did you have a single benzene hit in the soil?

And the best he could to was, "I don't recall."

He's prepared for how long? He has had this case for how long?

I asked him, Did you know that theory before you did your report? Yes. Nothing in there about benzene. Not a single benzene hit.

Don't up know if it was recontaminated from the benzene below that you would have gotten all the data up on big screens saying: Look, here's the proof. Here's the benzene numbers in the soil from the water below.

It wasn't there and it wasn't there for a reason.

Same thing with subsidence.

I asked him. He had two theories of subsidence. One is the microbes eat away that organic layer.

All right. Did you take a sample to see if the organic layer is gone or to see if

there are microbes there? That's what you said did it. Did you confirm that?

I didn't have to.

As a scientist you probably wanted to.

No, I didn't have to. I didn't need it.

Okay. Well, your other thing is that, because of electrical reactions, that the pore space in the clay is going to compact, so you're going to have this real tight clay that makes it sink down again.

Okay. That's easy. You took a hundred soil borings out there, and they've got all the layers all the way down. So all we've got to do is take the clay layer from the impacted area that's submerged, and the clay area from another area, and let's just compare the clays, the density. That's easy. Did you do that?

No. He didn't say "I didn't have to" there. He just said no.

So he's got these two theories. That's what you've heard all day, theories of what could've, might've happened.

No plan of their own.

No site-specific stuff of their own.

No confirmatory testing to show you what they say is true. When they are asked point blank about it, they either didn't do it or don't remember.

So here's where we're at the end of the day. We submitted a most feasible plan.

All right, here we go.

We went through, we talked about all the things that were tested. We talked about -- I'm not going to run you through it everything.

At the end of the day, we've submitted to you a plan that is feasible, that will further do confirmatory sampling to make sure that what we believe to be the parameters are in fact the parameters, that will do the very limited dig-and-haul, that will do more good than harm. Our plan will do more good than harm, which is necessary, and that will remove the constituents of concern as necessary.

So we have submitted to you something you can use, something that can be implemented and something that will make this property better.

Now the intended purpose of --

Put the other slide, the other. The closing one.

We will return this property or we'll have this property able to do everything that's intended now. And here's the irony: Dr. Rogers told you one of the things that this property would be good for is hunting and fishing. And then in the same breadth he told you, And there are a number of hunting and fishing leases out there right now. So clearly hunting and fishing is one of its intended purposes. It is currently being used for hunting and fishing.

What else is an intended purpose? Well, clearly oil and gas production. They make money off of oil and gas production. So you've got oil and gas production.

Is it suitable for oil and gas production? Obviously. There are ongoing operations there.

As far as it being a forest, is that one of the intended purposes that they have for it?

Here's how you can answer that question.

This is the plaintiffs' property right here. Okay? And this comes from -- this is Figure G1. It's already been submitted. It's in evidence. It's part of our plan.

You see the area right there to the west? Okay. This is a photo. Right over there.

Let me see if I've got it.

Right over there.

MR. JONES: Right over where? I'm sorry?

MR. CASH: Right there (indicating).

MR. JONES: That's outside of the property in this case?

MR. CASH: Oh, yes.

MR. JONES: We object. Hadn't come up at all.

THE HEARING OFFICER: Don't interrupt him.

MR. CASH: Just so we're clear, all of the evidence that's in this case --

THE HEARING OFFICER: Wait, wait, wait.

Slow down.

We're not in front of a jury, so ...

MR. JONES: But we should have some evidentiary basis for what you argue with in the end.

I mean, I can argue all day about Hess and the 4000 sites that it's polluted across America. Can I do that when I stand up?

Well, I'm going to. Please don't interrupt me.

MR. CASH: This is in evidence. So, so much for that.

And in fact our plan describes the discharge basin to the west. So you're going to see what their intended purpose is.

The big yellow circle, the big yellow circle is where Raceland Raw Sugar discharges its wastewater.

Now they talk about: We want forest.

Here's our area over here. Okay? That's clear. There you go.

Okay? So that is their cypress forest outside of this property.

So you want to know what their intended purpose is for their property? Look at how they have used it. Look at how they have used it.

At the end of the day, we've made admission to go remediate this soil. There has been nothing in this presentation that

would indicate that the plan that we've submitted isn't feasible and isn't appropriate and won't meet the 29-B standards that it's required to meet.

All of the other stuff: The subsidence that they really haven't established was caused by us, all of these other issues that they bring up may be part of their private damage claim. And if they can sell it to a jury, so be it, but I don't think they will be able to.

But they shouldn't be able to bring it over here in front of a Panel of scientists who are trying to meet regulatory standards. They can't rewrite the regulations. They can't rewrite the intended purpose. They can't rewrite what the purpose is of this hearing.

And I appreciate all of your time and all of your attentiveness.

THE HEARING OFFICER: Mr. Jones?

MR. JONES: Thank you.

All right. First thing I want to do is thank you for the couple of days that we've been together on behalf of the landowner.

It's been our pleasure to be here with you, and thank you very much for your attention that you've paid to this matter.

One of the fundamental things that Hess and Raceland disagree with here is that the rules are the rules. And it's kind of apparent over the course of about 40, 50, or 60 years as we wind this process up that Hess did not elect to follow the rules and elected to discharge and cause a massive amount of environmental contamination on this particular piece of property as a result of its operations. Everybody agrees with that.

Whether it was discharging saltwater into this what is now the flotant marsh, or whether it was allowing the infrastructure all around the facility to make what is basically a giant-sized pit which is extensively now caused -- has extensive salt contamination in it, which has now ruined a forest, and now they don't want to put that forest back.

So here we are as a part of our exercise before you-all talking about what is a most feasible plan.

The first thing I want to point out is -- and it's really important that you think about this, and I hope that you-all think about this -- is that that statute could not be more clear that what happens is you can do an evaluation plan or you can do a remediation plan.

We respectfully submit that based upon the addendum that was submitted on October 23, 2015, about a month ago, proposing 125 new samples or so -- may not be that exact number -- but 125 new samples or so in these areas of interest can no way end up being a most feasible remediation plan at this juncture.

Those samples have not been done. Our very nice toxicologist who came in to testify today was honest about that and he said, You know what? I can't give you any opinions as to whether or not there was going to be a human impact or going to be any human exposure issues until I get all of that data back.

And that's the right answer. Of course it's the right answer.

But Hess has been aware of this lawsuit, as Mr. Lapeze said, for about 11 years and elected to stick its head in the sand and not do any sampling, not delineate, and not do what is necessary to get this property cleaned up.

In fact, the agency here has been on them ever since sampling data started coming in as a result of this case to come back with information about how Hess was going to delineate the extent, horizontal and vertical extent of the contamination on the property.

Each and every time they refused. They did that in 2014. And then on July 18, 2015, when their plan came in, the state said yet again, Where is your delineation?

And all of a sudden, after being out on the property for over three years, October 23, three weeks ago, they come up, they say: You know what we're going to do? We're going to do a big delineation.

This has been -- what Hess has done is create a house of cards. And any one of those cards that you pull out, it all collapses. They knew full well on July 14

when they submitted their plan that they had not delineated all of these areas.

As far as this process is concerned and my presentation to you, I have no burden here. I have none.

Hess elected to admit responsibility, regulatory responsibility for the soil in this 220 acres. You know as well as I know that, when Hess does that, it then has certain obligations.

The landowner had zero obligations in connection with the submission. Hess pulls the trigger, admits liability, and then has the responsibility to do what, right off the bat? Its responsibility is to follow Chapter 6 and do a full delineation.

Now what did they do when they got to Chapter 6? They get to Chapter 6, they say: Well, we've done it. We may do it. We're not going to do it for salt because this is an inundated or a submerged wetland.

That's basically the position that they take. Clearly not every one of these AOIs that they identified is a submerged wetland. What is even more clear is that historically

it was never a submerged wetland, was never a submerged wetland.

So here's the question for you --

I don't know if it's me who's doing that.

THE HEARING OFFICER: That's me. Don't worry.

MR. JONES: Well, what's really troubling, what's really troubling is that, when you ask yourself submerged wetland versus an elevated wetland -- can we all agree that this was an elevated wetland, based upon everything, all of these experts on my side and on their side came in and said: Of course it was historically. It was an elevated wetland. We know that because there was a cypress swamp there and we know it was an elevated wetland.

Where in the regulations does it say what Mr. Cash says it says? It says, we've got to look at what today is.

Imagine the consequences of that and the responsibility that you as a Panel have when you start looking at this question of: Am I going to take -- am I going to allow -- is

this agency, this big building -- here we are in Baton Rouge -- are we going to allow an oil company to come into Louisiana, operate on 220 acres, bound off a section of a hundred or so acres, create these dams and these infrastructures, change the hydrology, move an elevated wetland to a submerged wetland, and then come in and say, Hey, you know what? We don't have to clean up any sale because, you know what we did? Thank God for us, we moved it to a submerged wetland.

Is that the rule in the state of Louisiana? Can't possibly be.

So what do we do? We go to the next aspect. We look at environmental contamination. Is this environmental contamination?

You can reject our approach through the regulatory thing. I would suggest you don't even have to get any further than the first. The better rule in the state of Louisiana would be: If we start with an elevated wetland, the oil companies don't get to come, change the hydrology, create a big barrier,

dump a bunch of water into it; and then when they get caught with their hand in the cookie jar, they come back and they say, Ooh, I don't have to clean up the salt. We contaminated the soil.

Nobody disputes that. We don't have to do the groundwater. What we have to do is we'll just throw a big blanket on it and say, It's a submerged wetland. That ought to be enough for you.

But if it's not enough for you, then let's talk about what about the cypress swamps here. Is there really anything?

Come on, scientists. You know you-all are all scientists. Mississippi State, Texas A&M -- I'm sorry, Mr. Campbell, I don't know where you attended.

But be honest. I mean, from our great toxicologist here, Mr. Edwards, I mean, really, are we all going to have any dispute in this case that, when we match up the 1941, 1973 and the salt water plume and the soil contamination, it has caused the loss of this cypress swamp? Of course it did. Of course it did.

Now, when we look at the environmental contamination definition, what does it say? Let's not guess about it.

It's going to be about the landowners' intent? Or it's going to be Mr. Miller's or Mr. Jones' or whoever? They wrote the rules. The rules say, What is the intended use of the soil?

Can we find that, Connie. I did it with Mr. Miller. Let's just pull that up.

Of course it says the intended use of the soil. This state can't override what the landowner wants to do.

If the landowner wanted to go out and put a nuclear plant out there, the state is going to say, I'm going to look at the intended use of the soil to determine whether or not there's a environmental contamination.

And why is that important? Because they want you to find -- given these photographs, 1941, 1973, they want you to find somehow miraculously that this is not environmental contamination.

Kind of the craziest thing I've ever heard of. You've got contamination all over

the property. They've now admitted for the soil. And they admitted for the soil, and critically important, including inundated wetland and submerged wetland. Including.

So we don't have to have a fight about whether they did it or not. Of course they did it. The question is: Is this Panel going to say, and the State of Louisiana, is the State going to say --

No, the next one, or the one before that actually.

Anyway, you'll find it.

Is the State going to allow a system under its rules where an oil company, where an oil company does this?

They didn't follow the delineation rules until October 23.

Submerged wetland doesn't -- is not their get-out-of-jail-free card. And if it is, we should look at the regulations, deep hard law, to make sure that that is not the end result, because that's not the right result. That's not the right result for the landowner. It's not the right result for hunters, fishermen, duck hunters, everybody

else in Louisiana that enjoys the coastal zone. It's just not the right answer.

And if the regulations provide that you've got to clean up that because it's a historical or whether it's now submerged, that's what you should do. That's what you should absolutely do.

But if you want -- can you pull that up, Connie?

Let's talk a little bit, let's talk a little bit about the experts while she's doing that.

Edwards, Mr. Edwards. He could not have been more clear. I asked him one question when he was offered for his expert testimony: Have you ever -- do you consider yourself a wetlands delineation expert?

Could not have been more clear.

I'll come to that in a second.

Could not have been more clear: No, I do not.

They then called Mr. Rodgers. And Mr. Cash talks about what we could have done, should have done. It's their burden. Once they came in and said, I admit to my portion

of the responsibility of this soil, it's their burden.

My client in this process, because we have contractual rights as Mr. Balhoff mentioned early on that will be fought down in Lafourche Parish, we have no burden here. It is a hundred percent their burden. They don't get to come in and say, Oh, there were some samples taken. We followed up. There were plenty of samples taken.

No, no, no. They have an obligation because you have rules. They have to step through those individual rules.

Anyway, Mr. Edwards on the question of, on the question of wetlands and submerged versus elevated, he's not a wetlands characterization person.

Dr. Rogers, he's got some experience. He's an impressive expert. He said, he had absolutely -- he didn't do a wetland delineation, despite the fact that he's built a couple. He didn't do a water depth analysis.

It's not our burden. It is not the landowners' burden when they admit

responsibility under the regulatory purview to come and prove to you that all 220 acres of this property is a submerged wetland. It's just not our burden. They have to do it.

Not one single expert that got on the stand and said all 220 acres are. Not one.

Why didn't they do it? Why didn't they measure the water?

Let's talk about contamination. Let's just read this.

Now, Mr. Cash is an awful good lawyer and I've got a lot of respect for him. We're going to be doing a lot of battles against each other. But what he or Hess are not allowed to do are change words in a, words in a particular statute or regulation.

So let's just read what contamination is and why this intended purpose is so important.

The introduction of substances -- here we're talking about salt and others, or contaminants -- into a groundwater aquifer or USDW or soil in such quantities as to render them, them, unusable for their intended

purposes.

It does not say the landowner or Hess or the hunters or -- of course, it says, you know, the soils' intended purpose.

If the defendant polluter discharges material in sufficient amount of quantity that renders that particular area insufficient or unusable -- let me use the exact word -- unusable for its intended purposes, that's when you walk into the contamination issue.

I think it's very clear that what we would respectfully suggest that you-all do is do this: Reject their plan. Reject their plan that they submitted on July 4 and for no other reason because of follow-up with all the additional data that's going to be coming in.

The second thing is that do not allow for this passive closure. There is not one authority in the history of Louisiana where the Commissioner has said: I'm going to take number 3 and I'm going to override number 1 on the affidavit requirement for the client. It's just not there.

They haven't put on an single -- and if I'm wrong, he gets to come up right behind me -- and you should listen very closely for him to say in this particular case that happened.

I'm unaware of that ever happening and I don't think it ever has happened.

So what should happen is that we should reject the plan on July 14, require them to go out and do more work in the manner of going out and taking additional samples where it needs to be taken. Let's get an assessment as to what those results are. Let's require a wetland delineation.

If you think that the submerged versus elevated wetland is an important issue, order them to pay for a professional to go out there and do a water-depth study or wetland delineation or whatever it is that they have to do to come back.

You just can't -- I would respectfully suggest, it would not be appropriate for the state agency to say, Hey, look, we're just going to take their word for it given this testimony.

What should happen is that they should have a professional expert come in here that you're able, your agency is able to cross-examine, understand and make sure that it's done correctly. And then, after all of that, given the intended use, make them go out and delineate the soil contamination. It is everywhere. It's everywhere out there.

And clearly, clearly, leaving aside all the qualified experts in here, it's having a huge impact in Lafourche Parish in this particular area on the environment. And trying to do as they have suggested, which is to weave through with this house of cards -- you know, I'm going to admit for groundwater, admit for soil, not admit for groundwater. I'm going to not delineate until two weeks before the hearing starts. I'm going to throw a big blanket over this to say that it's saltwater -- excuse me -- it's submerged, so I don't have to delineate the salt -- is that what this is about? Is that really, is that really what this is about?

And it's good lawyering. It's good lawyering, good advising. It's pretty poor

policy, pretty poor policy.

If this state is going to take a Panel of experts and say: You know what, Hess? You can do this. This is good.

Because we'll all be back here again and again and again fighting all these issues out.

When the contamination resulting from E&P operations is extensive and has caused environmental damage like this has, it is incumbent upon the government to do the right thing. And whatever that may mean, it should always mean: Go follow the rules. Go follow the rules. Go delineate the contamination.

Don't read in an exception for salt when you've killed off a cypress stand. Go follow the rules. And don't come and submit a plan called a most feasible plan -- that's what theirs was called, a most feasible plan on July 14.

I know we had an issue about this, as to whether it should be an evaluation or a remediation plan. The law couldn't be more clear. The rules couldn't be more clear. They have a choice, submit an evaluation or a

remediation plan, or, O-R. That matters.

Why does that matter? And why does any of this matter?

Let me tell you why it matters. Here's the reason it matters: The legislature right across the street set up this exercise to bring these matters to you-all. You-all have a say on what happens with civil rights and the rights of both Hess and our part. You have an impact on that.

Your report, your report that you-all will ultimately prepare will be provided to us, Mr. Cash and myself on behalf of our clients, and we will go to trial. And Mr. Cash will stand up there and he'll say: Guess what. The State said our remediation plan is fine.

And I'll stand up and say: No, they didn't say it was fine, or you didn't do it right, or whatever you-all end up saying.

So I want you to know that what you-all do matters here because it does impact rights. And all you have to do is think for one second that if you were one of those landowners, if you were one of those

landowners that had a dispute with Hess and you go to trial, and the State was going weigh in on one side or the other, what you would want is unabashed unequivocal fairness, fairness that they followed the rules.

I really appreciate you-all taking the time to listen to Hess and to Raceland, in our side. We actually moved by pretty quick. We thought we would be done Wednesday or Thursday and here we are.

I to want to thank you on behalf of myself, my team and my client for your listening to us and your attentiveness here in this process.

Thank you.

THE HEARING OFFICER: Mr. Cash?

MR. CASH: Can I have my microphone, please?

I'm glad that at one point Mr. Jones said that the legislature has given you-all certain authorities, because for a while I thought he was confused about which building we were in. I think he thought we were at the legislature because he was asking you-all to make policy. He was asking you to make new rules, new regulations.

Is the State of Louisiana going to let -- that's not what happens here. What happens here is enforcement of regulations that are made, enforcement of laws that are made down the street, and he's getting you to just ignore all of that.

I think it is somewhat ironic that Mr. Jones says that I don't want to read the words that are there. So I'm going to read the words that are there, because this just floors me that he's trying to make this argument.

"Contamination, the introduction of substances or contaminants into, one, a groundwater aquifer --" not at issue here -- "two, a USDW --" not at issue here -- "or three, soil --" and how much of it do you have to put in, "in such quantities as to render them --" what's them? The groundwater, the USDW or the soil -- "to render them unusable for their intended purposes."

So you have to know what the intended purposes are. And who decides the intent? The landowner. I'm trying to give him the

power. It's the landowner. He represents the landowner.

If you were the landowner, wouldn't you want to decide what the intended purposes were?

He asked, If you were the landowner, wouldn't you want Hess to be held?

I'm going ask: If you were the landowner, wouldn't you have submitted a plan?

If you were the landowner, wouldn't you have come and said, Here's what I want to be done with my property? Here's the most feasible way to do that?

Sure you would, if that's what you really wanted.

So what are the intended purposes?

They use it to produce oil and gas.

Can you use it for the intended purpose? Check, you can.

They use it for hunting and fishing. Dr. Rodgers went on and on, yes, there's hunters and fishers. I saw many hunters and fishers when I was out there.

Can you use it for that intended

purpose? Yes. Check.

They bought it in '98, so the intended purpose when they bought it couldn't have been a cypress forest because there wasn't a cypress forest there when they bought it.

What he wants us to do, what he wants you to do, is not to do what the regulations say and enforce the regulations. He wants you to fix -- basically give them a better deal than they had.

I'm surprised he didn't ask you to build it all up and make it agricultural land so they can grow corn and other things, give them an whole new business line.

He wants you to take a flotant marsh that they bought in 1998 and turn it into a forest, but he wants you to do it on our nickel.

The regulations don't do that.

If he can convince a jury that that's what ought to happen, more power to him.

And I'll return the favor on the record: He's a good lawyer. He might be able to do it. He's a terrific lawyer.

But that's not what's going on here.

What's going on there is lawyering. What's going on there is science.

So that's what contamination is.

Right.

Can you put up 29-B where we talk about passive pit closure? It's the one I emailed you, or put on that one stick. It's on a separate stick.

Okay. Go to 313, which is page 22.

If you'll just scroll down, it shouldn't take too long.

Will it scroll? We're on page 16. There we go.

All right. Pit closure.

Keep going. 313. Down a little bit.

Now, let's go to the next page. Passive closure, H.

Pit closure. Passive pit closure, which is AOI 1 --

I'll come stand by you.

-- which would include AOI 1 and AOI 2, where pit closure would create a greater adverse environmental impact than if the pit were allowed to remain uncleaned.

For AOI 1 and AOI 2, the only testimony

you heard was it would do more harm than good. That wasn't countered by a single expert they brought. They said they have no burden; but certainly they have the right, if they thought that was wrong, to have one of their experts swear that that's wrong. They didn't.

Now go down to the next page, Connie.

Under number 2, for all the things, they shall submit the following. You have a whole list.

"E" is an Affidavit of No Objection From the Landowner Endorsing Operator's Request for Passive Pit Closure.

That's what they say you have to do. Without that you cannot do passive closure.

Now go down to 3, because that's under 2E. And 3 says -- and he wants to ignore it, but you can't ignore what the legislature writes.

"3, the Commissioner of Conservation retains the right to grant exceptions to the requirements of 313.H.2 as he deems appropriate," which means if you think it is more beneficial to this land to passively

close AOI 1 and AOI 2, you don't need landowner approval, especially in a situation like this where you are never going to get it when this is in litigation.

What do you all think the odds, when they are suing for hundreds of millions of dollars, that they are going to agree to it? That's why 313.3 is there.

So at the end of the day what are we asking you to do?

Find this is a submerged wetland.

Two, recognize it that under 29-B there are no salt parameters for a submerged wetland, and rule that AOI 1 and AOI 2 can be passively closed as an active dig-and-haul would do more harm than good.

Find that AOI 3, 4, 5 and 6 can be remediated as set forth in our most feasible plan, which means we'll do confirmatory first. And after we do confirmatory, we'll do the excavation and then we'll confirm again. Talk about belt and suspenders.

AOI 7 and 8, same protocol.

And remember, there wasn't anything, you didn't hear anybody talk about: Well, here's

why AOI 3 won't work, and here's why AOI 4 won't work, here's why 6 won't work; here's why 7 and 8 won't work. The only thing you heard about was 5.

And his whole theory for 5 doesn't work. His whole theory for 5 doesn't work.

And you-all are the scientists and you look at the science. Look at where the water table is. Look at what you've got. Look at the results and see if you have benzene in any of the soil. And you won't find it.

So at the end of the day, I join with Glad in thanking you on behalf of Hess, on behalf of the process quite frankly for being here. I'm glad we kept you not quite as long as we had threatened to keep you.

I appreciate your attentiveness.

Mr. Balhoff, appreciate you running this.

Madam Court Reporter, I'm sorry we got too fast sometimes and too quiet sometimes, which we did.

But this is important, and Glad and I agree that what you are doing here is important. It does matter, and I hope you

feel that we've treated it that way and treated you-all that way.

So thank you can very much.

THE HEARING OFFICER: Let me first of all thank both sides, because I think both sides -- you know, the quality of presentations on both sides was excellent. I speak for the Panel.

I have three, we talked about whether they have to be -- whether the parties want to submit post-trial briefs. I'm not suggesting that you submit briefs. I think the issues are out there.

But there are three areas I would like you to give me something, either in a letter or you can do it in brief form, and it can be very short. And I will go back to my office and try to put this in an email to you. But I'll tell you what I see as things that this Panel may want some specific citations for, maybe not in any particular order, but this is the order I listed them.

Can historical conditions of a site or property be considered by the Panel as opposed to existing conditions for purposes

of assessing compliance with the specific relevant standards and regulations in approving or structuring the plan?

In other words, the two parties here seem to be disagreeing. Hess says existing conditions are all that are to be considered. The landowner is saying you can look to historical conditions. That's an issue. I'm not taking a position. They will ultimately, the Panel will take a position.

But I want specific citations in the regulations; in other words, in 29-B. In other words, I don't want to hear later, as you had at some preponderance hearing, that this Panel didn't take into consideration some specific section of the regulations or the statute on that issue.

One side here is saying existing conditions are all you can consider; the other side is saying you can consider historical conditions. Be specific. You don't need to write a treatise or a dissertation. Just give us citations that you would rely upon in 29-B or the statute, or if there's something else; but you don't

need to give me a lot of things that aren't relevant. Okay?

Secondly: If this site/property today is -- if they find it to be a submerged wetland, assuming for purposes of this question it's found to be a submerged wetland, are there salt parameters -- EC, SAR, ESP -- that apply or not?

Mr. Miller took that stand and seemed to suggest that, even if it was a submerged wetland, he was looking at 313 and he had his own spin on 313.

So I want specific citations or support from Hess on the one hand that salt parameters don't apply in that context, from the landowner if they believe they apply in context of a submerged wetland. If that's what the Panel were to find, I want the support for why salt parameters would apply in any event.

And the third thing is there has been a lot of discussion about the phrase "intended purpose" in the Chapter 3 definition of contamination.

Hess says it means the landowners'

intended purpose. The landowner says you can look to historical use or conditions or potential, projected use.

Again, the specific citations to support -- there may not be any. I don't know -- but I want it focused on why "intended purpose" means what you say it means.

Those are three very specific things.

Again, historical -- number one: Specific citations of support for the contention that you can only look to existing conditions of the site versus you can look at historical.

Secondly: If it's a submerged wetland, the salt parameters do not apply or there's some reason they would apply.

And thirdly: The issue about intended purpose.

I'll go back, I'll do an email and I'll try to be a little bit more clear.

Are there any questions for me about what I'm asking?

MR. JONES: No.

THE HEARING OFFICER: In other words, what I

don't want is they are going to do whatever they do. And then somewhere at some preponderance hearing, somebody is going to say: Well, they didn't take into consideration my analysis of something in the regs or something in the statute.

So I want them to have the benefit of your thoughts on that. It can be done in two pages or you can take longer if you want. I'm not asking for briefs necessarily. A letter is fine. And it can be addressed to me and I'll make it available to them.

Have the two parties agreed on -- I don't know if any exhibits came in today. But we need to make sure the exhibits are all in, and I want to make sure that both sides agree with each other's final list.

In other words, I don't have to have it this minute. But if you send it to me by email, I want both sides to agree that they agree with the other side's list so later on we're not fighting about what came into evidence.

And then that final list can be marked with an exhibit sticker and either given to

me, you know, shortly.

Anything that the Panel wants to add?

Any other questions?

Mr. Jones, any other questions?

MR. JONES: Uh-uh. We're all set.

Thank you-all.

THE HEARING OFFICER: I appreciate it very much. We're off the record.

(Whereupon the proceedings adjourned at 2:30 PM.)

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REPORTER'S CERTIFICATE

I, ESTELLA O. CHAMPION, Certified Court Reporter and Registered Professional Reporter in and for the State of Louisiana, and as the officer before whom this testimony was taken, do hereby certify that the foregoing proceedings before the Department of Natural Resources, Volume 3, reported on November 16, 2015, transpired as hereinabove set forth in the foregoing 252 pages.

I further certify that said proceeding was reported by me in the Stenotype reporting method, was prepared and transcribed by me or under my personal direction and supervision, and is a true and correct transcript to the best of my ability and understanding.

I further certify that the transcript has been prepared in compliance with transcript format guidelines required by statute or by rules of the board, that I have acted in compliance with the prohibition on contractual relationships as defined by Louisiana Code of Civil Procedure, Article 1434, and in rules and advisory opinions of the board.

I further certify that I am not an attorney or counsel for any of the parties, that I am neither related to nor employed by any attorney or counsel connected with this action and that I have no financial interest in the outcome of this matter.

This certificate is valid only for this transcript accompanied by my original signature and original required seal on this page.

Baton Rouge, Louisiana, this 8th day of December, 2015.

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ESTELLA O. CHAMPION, CCR, CRR
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